



CROP C FOOTPRINT BENCHMARKING ASSESSMENT 2022

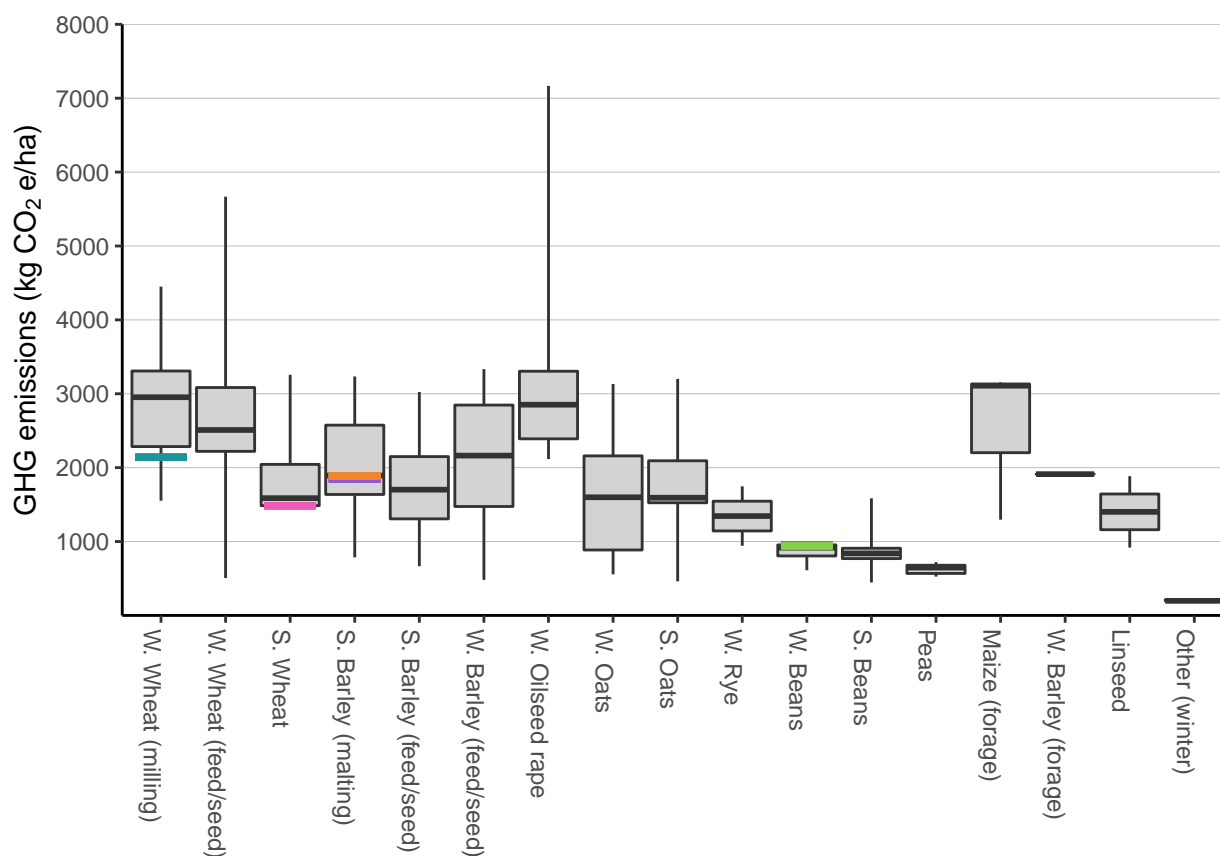
YEN User ID	YZ1000
Entrant name	Front field
Farm name	John Smith
Location	Engager
Crop type(s)	W. Beans, S. Wheat, W. Wheat (milling), S. Barley (malting)
Harvest year(s)	2021
Sponsor/supporter	W. Beans
Sponsor/supporter email	4.3

INTRODUCTION

We would like to thank you for submitting your entries to our pilot year of YEN Zero. You are one of 85 growers who submitted data from a range of arable crops including wheat (156 entries), barley (113), oats (73), OSR (87), beans (56) and peas (25).

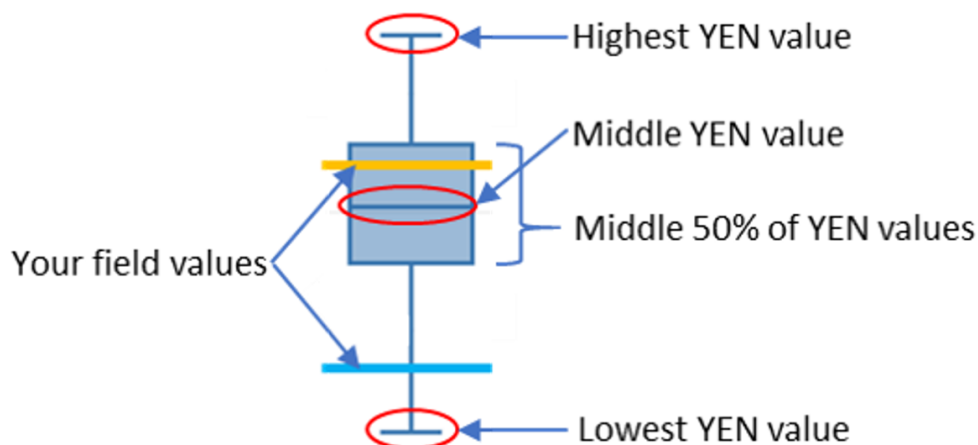
This report is the second report provided by YEN Zero in which your crop C footprint analysis is presented alongside the range of figures within the YEN Zero database for each crop type, to allow for comparison. Benchmarking your data in this way can indicate where you are performing higher or lower than other growers in the network, in terms of GHG emissions associated with different aspects of crop management.

Presented below is the range of GHG emission intensities (GHG emissions per tonne of product) for each crop within the YEN Zero network. The coloured lines show how your entries compared.



UNDERSTANDING YEN BENCHMARKING

Benchmarking within the YEN Zero network allows you to gauge the performance of your crops against other crops in the network. This has provided the principal value of YEN to participants throughout other YEN networks. We do this with benchmark charts, which compare your values with everyone else's as per the following key:



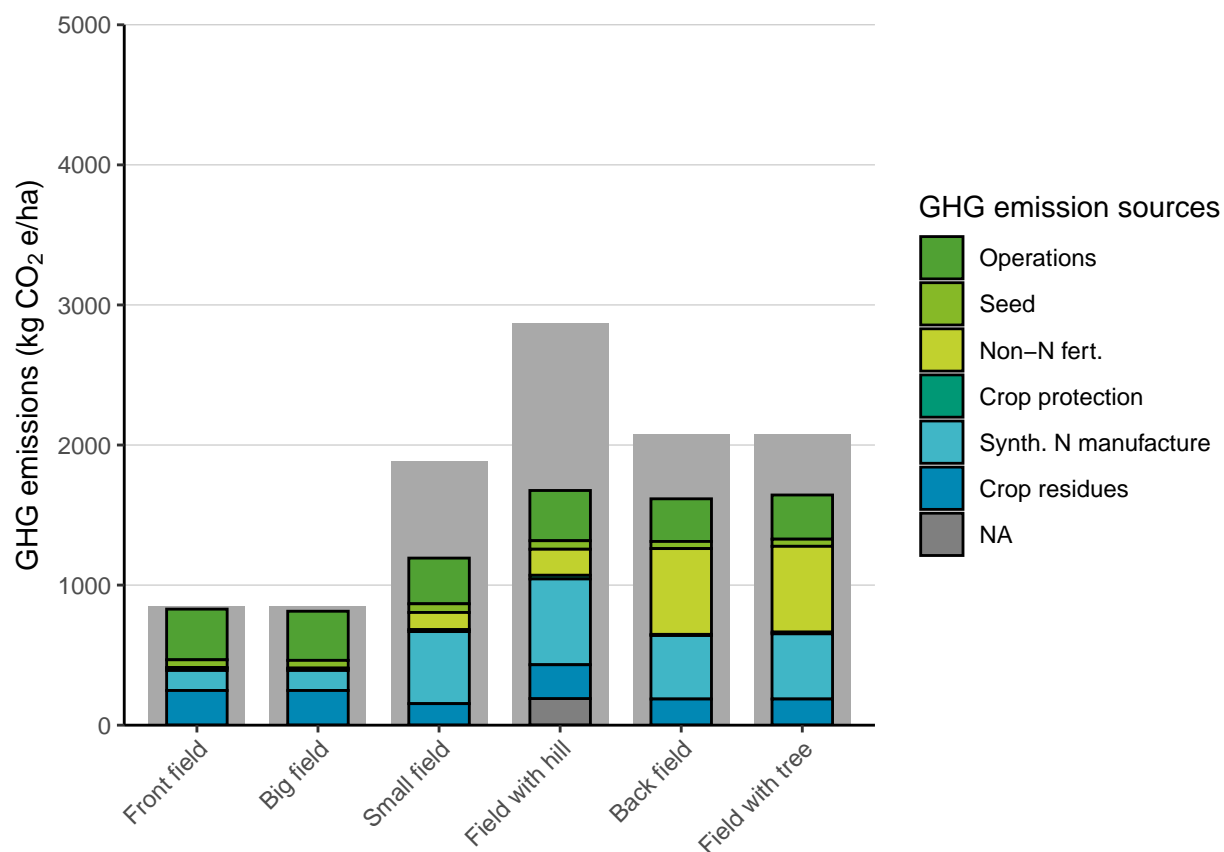
The 'whiskers' show the range of YEN Zero values whilst the box shows the middle half of values, with a line for the mid-value. The coloured lines show the values for your entries.

YOUR GHG EMISSIONS

This section provides detailed analysis of how the GHG emissions from your farming operations compares against others in the YEN Zero network.

Entry	Field name	Crop type	Variety	GHG emissions		
				t/ha	kg CO ₂ e/t	kg CO ₂ e/ha
1	Front field	W. Beans	Tundra	4.3	703	958
2	Big field	W. Beans	Tundra	4.3	700	943
3	Small field	S. Wheat	Chilham	5.3	281	1485
4	Field with hill	W. Wheat (milling)	Skyfall	8.3	256	2140
5	Back field	S. Barley (malting)	LG Diablo	5.2	358	1848
6	Field with tree	S. Barley (malting)	LG Diablo	5.2	366	1887

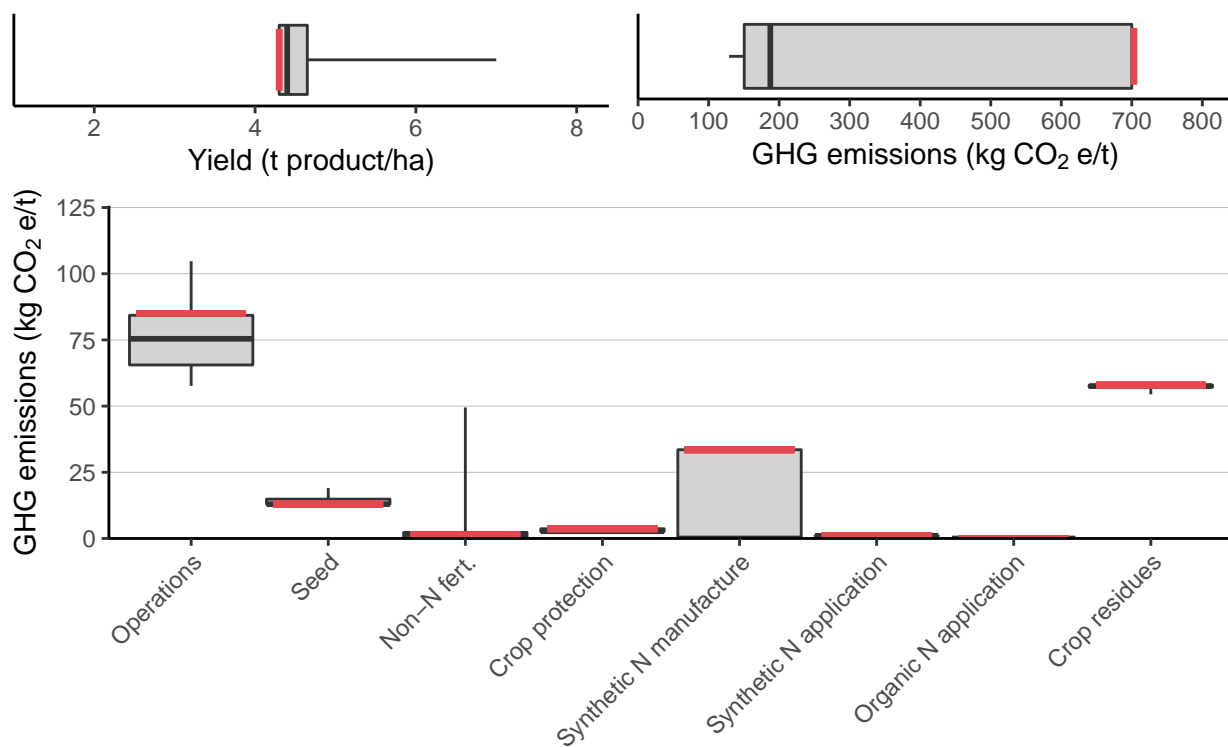
The graph below shows the total GHG emissions (per ha) for each of your entries, broken down into the main emission sources. The grey bars in the background show the average total GHG emissions for that crop type within the YEN Zero database.



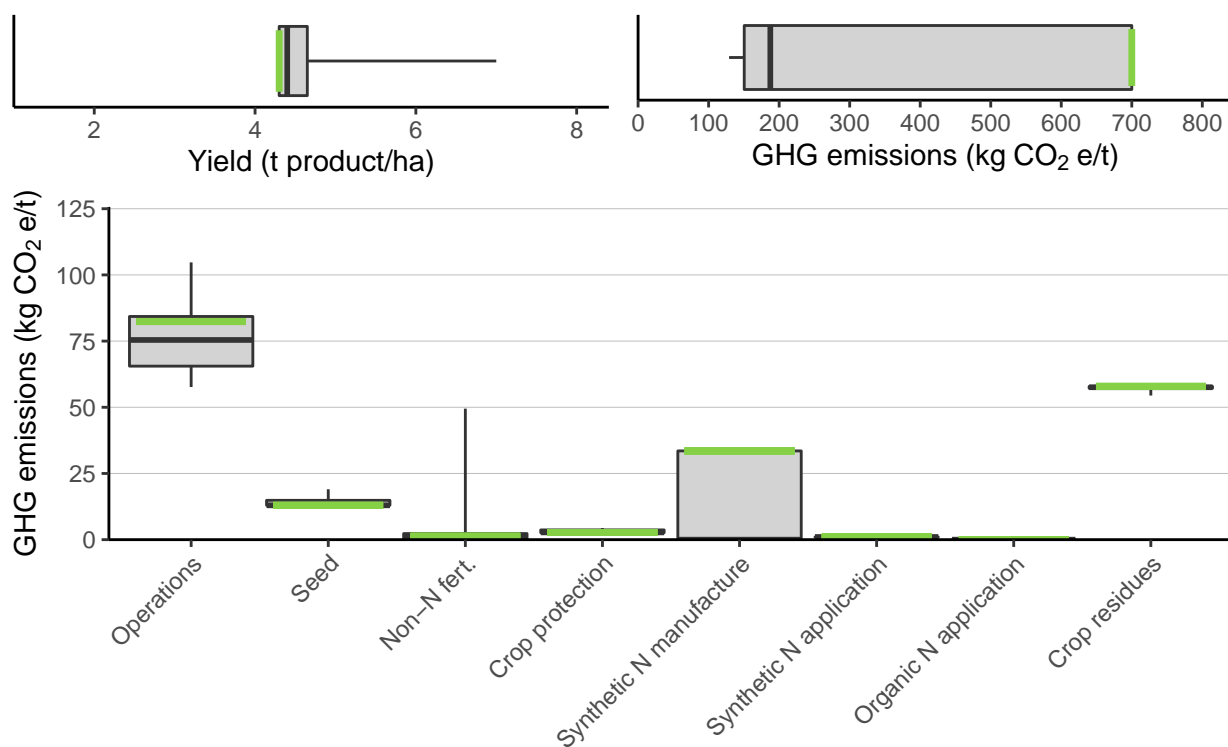
BENCHMARK ASSESSMENT

This benchmark assessment shows boxplots comparing your yield, total GHG emissions intensity, and GHG emissions by source, with the rest of the YEN Zero network.

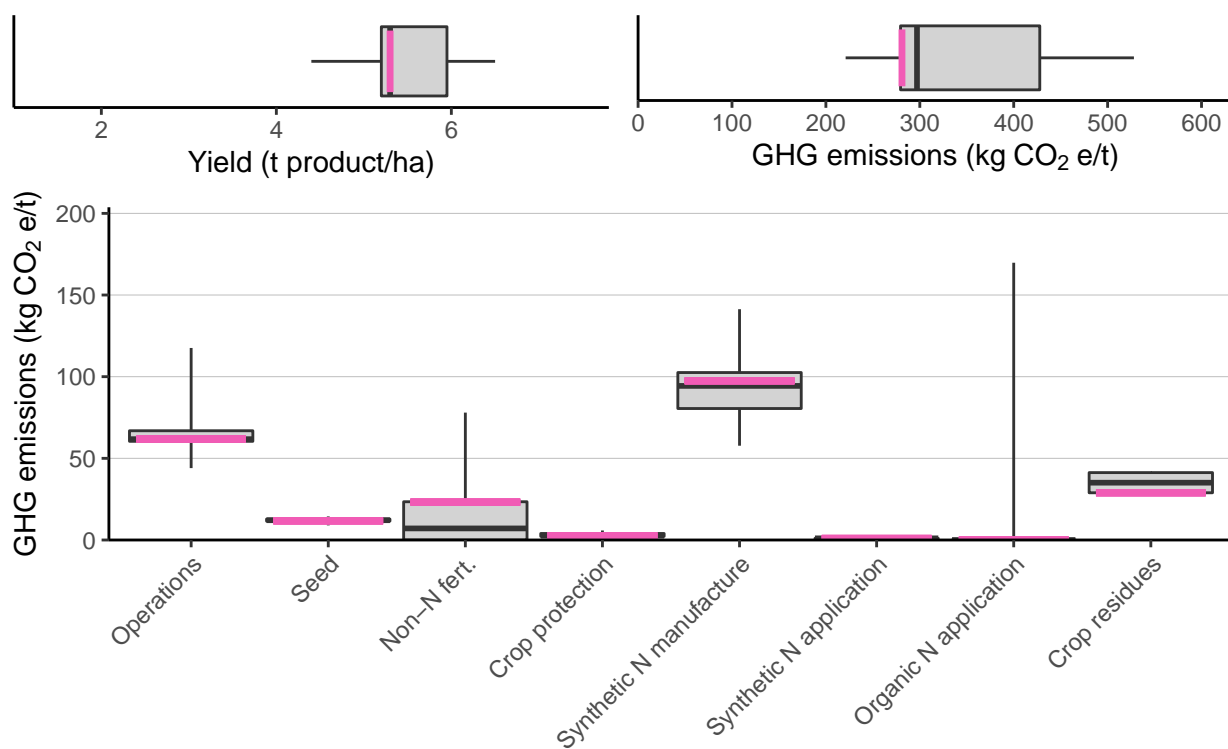
Front field - W. Beans



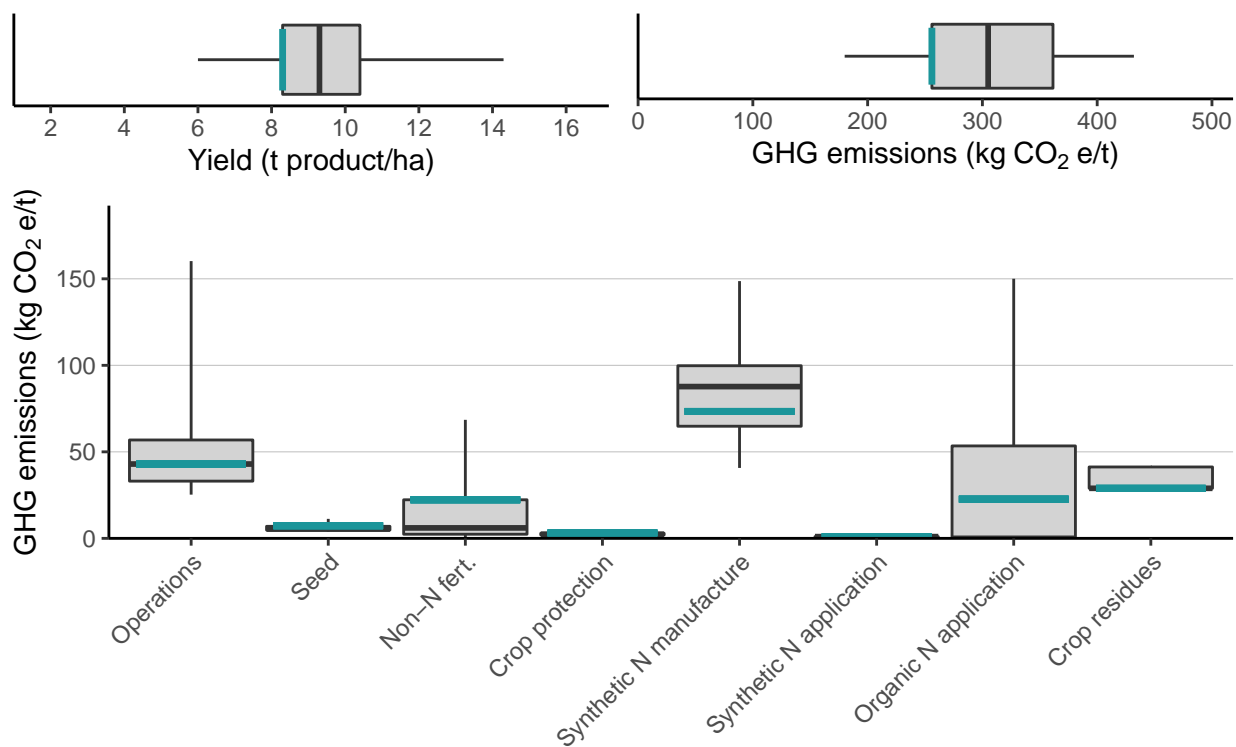
Big field - W. Beans



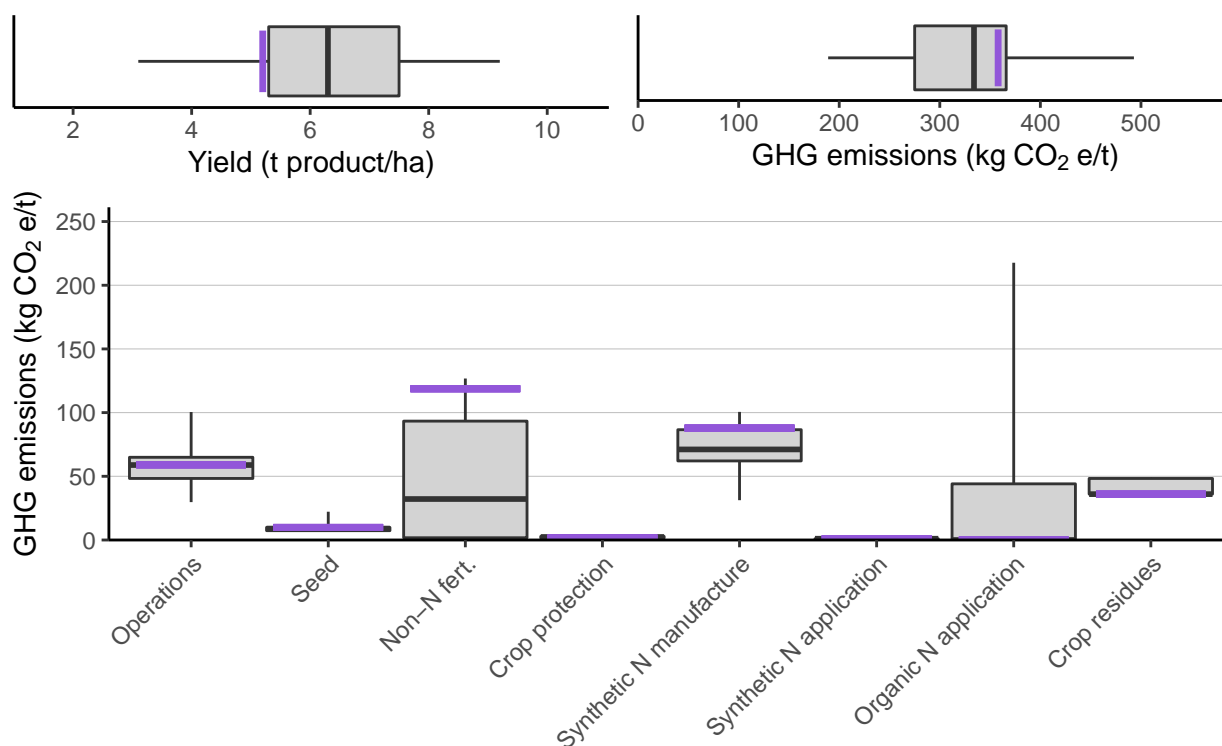
Small field - S. Wheat



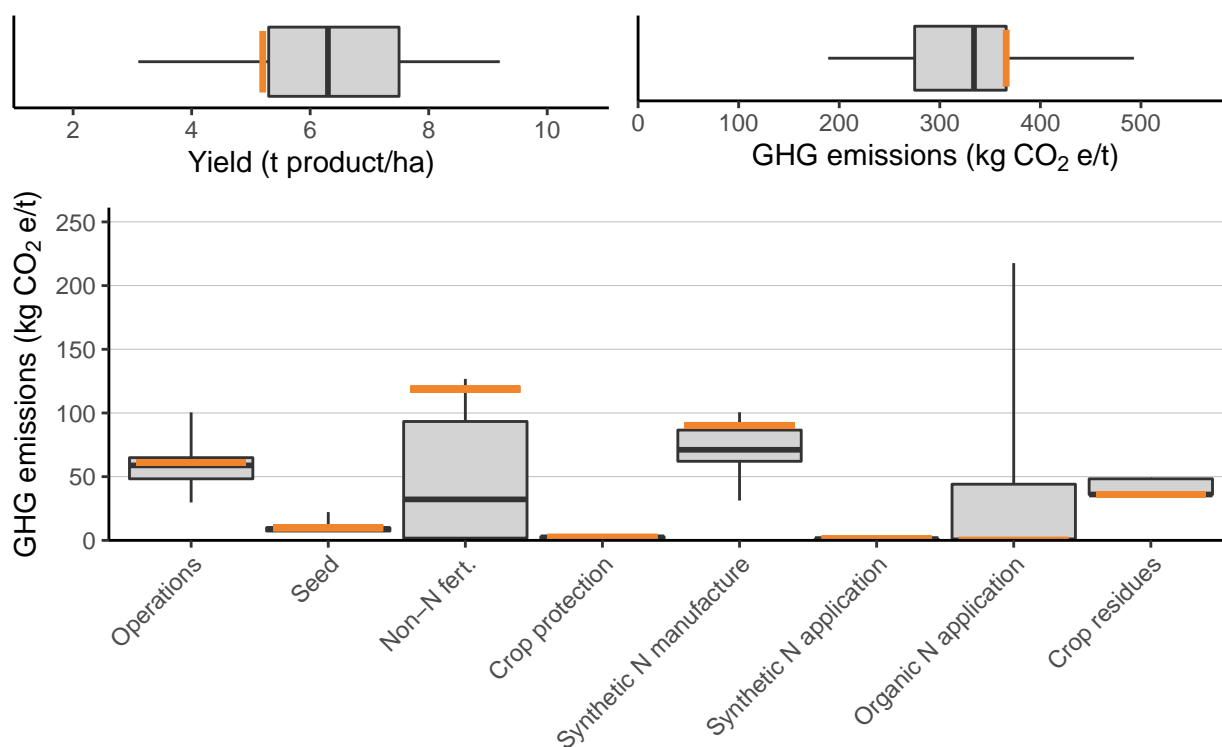
Field with hill - W. Wheat (milling)



Back field - S. Barley (malting)



Field with tree - S. Barley (malting)



KPI BENCHMARKING

GHG emissions are driven by on-farm activities so it is important to quantify these in the form of key productivity indicators (KPIs) to identify emission hotspots. The table below outlines some of the main KPIs that influence GHG emissions from crop production, comparing your data to the average values within the network, for the same crop type. Values are colour coded to show comparisons to YEN average values for each crop type.

Gross margin figures are estimated based on... to provide an indication of how C footprints of crop management systems are associate with production costs.

		Front field	Big field	Small field	Field with hill	Back field	Field with tree
		W. Beans	W. Beans	S. Wheat	W. Wheat (milling)	S. Barley (malting)	S. Barley (malting)
Yield	t/ha	4.3	4.3	5.3	8.3	5.2	5.2
GHG/t	kg CO ₂ e/t	703	700	281	256	358	366
GHG/ha	kg CO ₂ e/ha	958	943	1485	2140	1848	1887
N application rate, synthetic	kg N/ha	39	39	147	175	130	133
N application rate, organic	kg N/ha	0	0	0	7	0	0
Cost of synthetic N	kg N applied/t yield	9	9	28	21	25	26
Fuel use	L/ha	36	36	54	62	42	46
Total no. of passes	no.	5	4	6	9	4	5
Crop protection spend	£/ha	4	4	5	8	5	5

Performance versus YEN average for relevant crop type:

Lower 20%		Middle 20%		Upper 20%
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More green = more favourable result, e.g. higher yield or lower N use.

YEN ZERO SPONSORS

We are most grateful to all our sponsors. They not only provide funding, but they are fundamentally involved in management of YEN Zero and in supporting individual farms in making their entries. YEN Zero would not exist without them!



Upcoming YEN Zero Events

1. YEN Zero Results Meeting, 18th March 09.00-10.30 am

A virtual Results Meeting where ADAS will summarise the YEN Zero Pilot Year, the methodology behind calculating crop C footprints, and present an analysis of the YEN Zero dataset to better understand what is driving the variation in crop C footprints.

Please register for this meeting [here](#).

2. 3rd YEN Zero Pilot Year Discussion Workshop, 5th April 09.00-11.00 am

Our final virtual Discussion Workshop of the Pilot Year will focus on mitigation strategies and provide an opportunity for participants to discuss their results, this will include:

- What strategies have the most potential to reduce emissions?
- What strategies are already being successfully used on farm by YEN Zero growers?
- The practicalities around introducing new mitigation strategies on farm e.g., logistics, cost.

A meeting link to this event will be sent to YEN Zero members very soon.

This report is prepared using standard IPCC and UK National GHG Inventory methodologies for assessment of greenhouse gas (GHG) emissions using the AHDB Environmental Benchmarking Calculation Engine (EBCE), which was developed by ADAS. Full details of the methodologies used can be found at www.yen.adas.co.uk/projects/yen-zero. For any queries about your report, please contact Christina Baxter (christina.baxter@adas.co.uk).