



# Nutrient Offtake Report 2022

FARM NAME: Anonymous  
FARM ADDRESS: Example Farm, Street, Town, County  
YEN Nutrition Membership ID: YN00000

Date lab results received by ADAS: 22 September 2022, 27 September 2022, 15 September 2022  
Date ADAS reported offtakes: 07 March 2023

Further information can be found on the YEN Nutrition website: [www.yen.adas.co.uk/projects/yen-nutrition](http://www.yen.adas.co.uk/projects/yen-nutrition)  
Please make any further enquiries to: [yen@adas.co.uk](mailto:yen@adas.co.uk)  
**YEN Dynamic Benchmarking** is now available from the YEN members area: [www.yen.adas.co.uk/dashboard](http://www.yen.adas.co.uk/dashboard)





## Welcome to YEN Nutrition

Your grain samples, field data, harvest data & payment enable us to provide you with three reports:

1. This **Offtake Report** ... to guide maintenance of soil P, K, etc.
2. A **Benchmarking Report** (in Nov.) to diagnose shortfalls & surpluses
3. A **Season Summary** (in March) ... with overall lessons from 2021.

This is your **Offtake Report** which contains

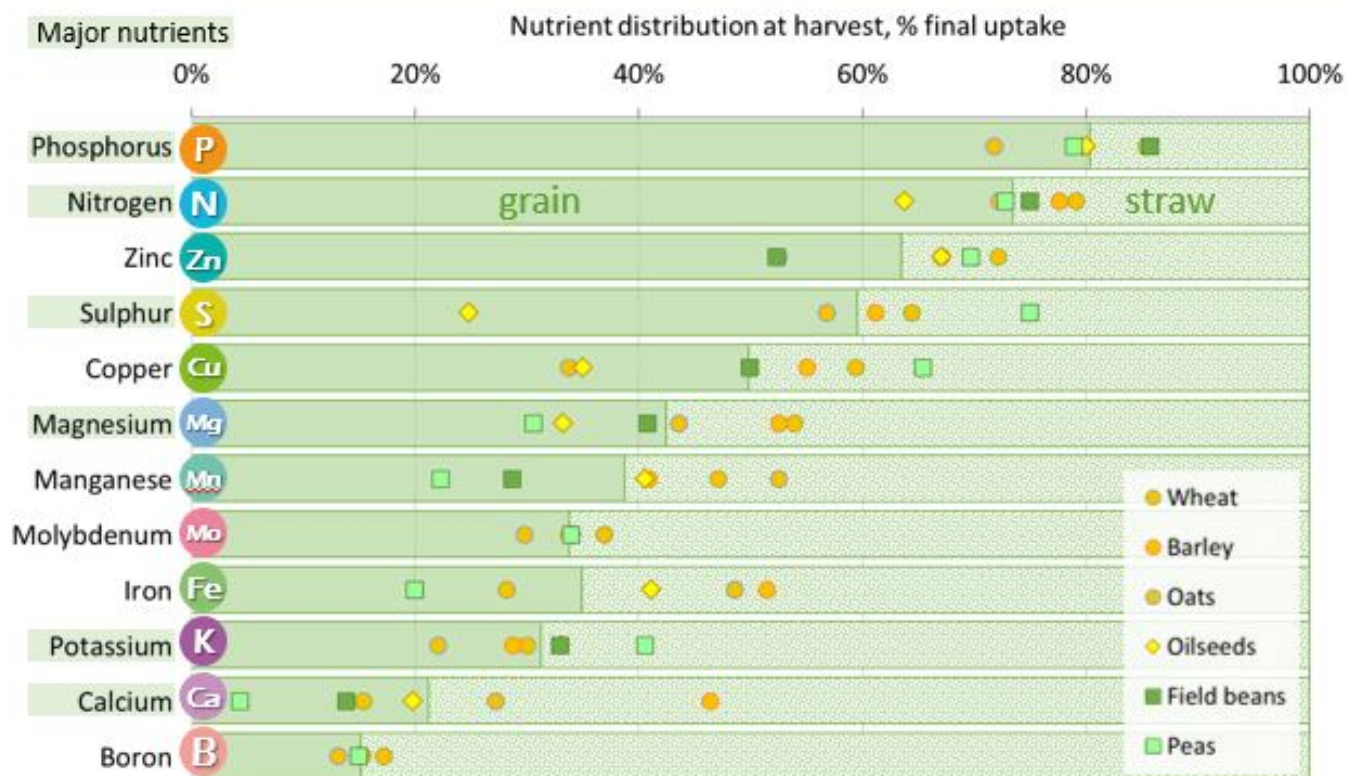
- **Offtakes** of all macro-nutrients ... on Page 3
- **Total Capture** of each micro-nutrient ... on Page 4, and
- **Grain analyses**, as reported by your lab ... on Page 5.

## NUTRIENT OFFTAKES explained ...

To maintain soil fertility of cropped land at minimum cost, nutrient removals, whether in grain or straw, must be known accurately. Multiplying yields by grain nutrient levels gives exact offtakes in grain.

If straw was removed (and not analysed) we can estimate straw nutrient removals from your grain analyses by assuming average partitioning of each nutrient to straw according to crop type as shown below. (Bars show overall average partitioning – points show partitioning for each crop type). Crops generally hold most of their N & P in grain but most K in straw.

NB: For minor cereals (rye & triticale) we assumed nutrient partitioning to be as for wheat, all oilseeds we assumed to be as in oilseed rape, and all pulses other than peas we assumed to be as in field beans.





# Offtakes of Macro-Nutrients... to help maintain soil nutrient status...

Crop nutrient offtakes less nutrient applications indicate the rates at which each crop will have run down the soil's nutrient status. In order to maintain soil nutrient status it will often be necessary to replace nutrient offtakes with nutrient applications either in organic materials or manufactured fertilisers. The table below shows nutrient offtakes for each of your crops, calculated from grain nutrient concentrations (from the lab – see last table), grain yields and straw usage. Any soil with an index less than is required to sustain intended crop growth (red & orange cells below) will need nutrient applications larger than were taken off by the last crop.

**KEY to RB209 (& SAC)<sup>1</sup> soil levels:**

<b>Index 0 (VLow)</b> apply more than off-take	<b>Index 1 (Low)</b> at least replace off-take	<b>Index 2 (Mod.-)</b> replace offtake	<b>Index 2+ (Mod.+)</b> replace offtake	<b>Index 3 (High)</b> monitor	<b>Index &gt;=4 (VHigh)</b> run-down & monitor
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<sup>1</sup>Soil analysis and interpretation in England, Wales and Northern Ireland generally use RB209 methods whereas these differ in Scotland and are defined by SAC. RB209 and SAC methods both have the same aims but are not directly convertible. For further information see the FAQ section of the YEN Nutrition website.

Sample Name	Crop type	Yield t/ha	Straw fate	Soil levels, mg/l			Offtakes in grain and straw, kg/ha					
				P	K	Mg	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	SO <sub>3</sub>	MgO	Ca
Field 1	Oilseed Rape	5.0	Returned	29	215	69	137	70	39	49	22	24
Field 2	Spring Barley	5.7	Returned	13	470	90	95	29	31	17	8	3
Field 3	Spring Wheat	5.7	Removed	15	380	440	93	38	71	19	12	6
Field 4	Winter Barley	9.6	Removed	11	380	290	168	59	122	38	21	7
Field 5	Winter Beans	7.0	Removed	45	265	195	324	65	192	31	21	31
Field 6	Winter Wheat	11.0	Removed	33	168	111	174	72	109	31	23	13





# Capture of Micro-Nutrients...to justify nutrient applications...

Crops only need to capture small quantities of micro-nutrients. On most land, natural weathering of minerals, mineralisation of organic matter and normal rooting provide sufficient of each micro-nutrient to support uninhibited growth of each crop and high yields year-after-year. However, many growers apply additional micro-nutrients to their crops. Total capture of each micro-nutrient by each crop is estimated below, to compare with the quantities of each micro-nutrient applied.

Shortfalls in macro- and micro-nutrient capture (or excesses of N) are best diagnosed from grain nutrient concentrations, shown on the next page.

## Nutrient capture in all above-ground biomass, g/ha

Sample Name	Crop type	Yield t/ha	Fe	Mn	Zn	Cu	B	Mo
Field 1	Oilseed Rape	5.0	779	334	215	44	321	5
Field 2	Spring Barley	5.7	454	141	262	51	24	14
Field 3	Spring Wheat	5.7	844	263	186	47	36	9
Field 4	Winter Barley	9.6	826	304	337	91	60	37
Field 5	Winter Beans	7.0	1685	293	473	179	395	30
Field 6	Winter Wheat	11.0	1006	594	252	50	53	21



# Grain Nutrient Concentrations... as received from the lab

Below are your nutrient concentrations in grain dry matter as received from your chosen Lab (NRM). Your **Benchmarking Report** in November will show in more detail how each nutrient level compared to all other samples of this crop type analysed **from this season**. Note that you can also now assess your data using **YEN Dynamic Benchmarking** available from the member's area on the [YEN website here](#).

## KEY to nutrient concentrations:

**Low:** Grain concentration is less than 75% of all previous YEN results for this crop type<sup>1</sup>

**Grain nutrient concentration not low**  
(or high for N)

**High:** For grain N, the value is more than 75% of all previous YEN results for this crop type<sup>2</sup>

Field	Crop	N <sup>1</sup> %	P %	K %	S %	Mg %	Ca %	Fe mg/kg	Mn mg/kg	Zn mg/kg	Cu mg/kg	B mg/kg	Mo mg/kg
Field 1	Oilseed Rape	3.00	0.67	0.70	0.43	0.29	0.54	70	30	32	3.4	10.6	0.4
Field 2	Spring Barley	1.95	0.26	0.53	0.14	0.10	0.05	48	12	36	5.7	0.8	1.0
Field 3	Spring Wheat	1.71	0.31	0.56	0.12	0.11	0.03	49	26	28	5.8	1.3	0.7
Field 4	Winter Barley	1.80	0.28	0.55	0.14	0.11	0.06	52	15	28	6.1	1.1	1.5
Field 5	Winter Beans	4.67	0.44	1.33	0.18	0.12	0.13	57	14	42	15.0	10.0	1.7
Field 6	Winter Wheat	1.64	0.31	0.45	0.11	0.11	0.04	30	30	19	3.2	1.0	0.9

<sup>1</sup>We only know a few critical values, so this year we are using YEN-low values (i.e. low quartiles from all crops of this type entered in all YENs since measurements began in 2016) as 'thresholds of concern' for all nutrients in all crops. We find YEN-low values to be very similar to the critical thresholds we have for N, P, S and Mn in wheat, as well as to less certain critical values of K, Mg, Zn & Cu, so we are using these YEN-low values instead of 'Critical values' for all nutrients in all crop types.

<sup>2</sup>% protein is estimated from % N, as N x 5.7 for cereals or N x 6.25 for oilseeds & pulses. Grain N% is variety-dependent; variety norms for grain N% of cereal species are best taken from the average protein (or N) concentrations reported in the AHDB Recommended Lists. A difference of 0.2% in grain N from the norm relates approximately to a difference from optimal N supply of 60 kg/ha.



Independently analysed by NRM, a division of Cawood Scientific Ltd, Coopers Bridge, Braziers Lane, Bracknell, Berkshire RG42 6NS Tel +44 (0) 1344 886338 Fax + 44 (0) 1344 890972.  
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