22 November 2022

Grain Market Outlook Conference 2022:

Managing risk and looking ahead to new demand

AHDB

CEREALS & OILSEEDS

Session 1.

AHDB market outlook

Megan Hesketh, Anthony Speight, Millie Askew & Mark Topliff

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Global grain outlook

Are strong global prices going to continue supporting a well-supplied domestic market?

Megan Hesketh, Senior Analyst – Cereals and Oilseeds

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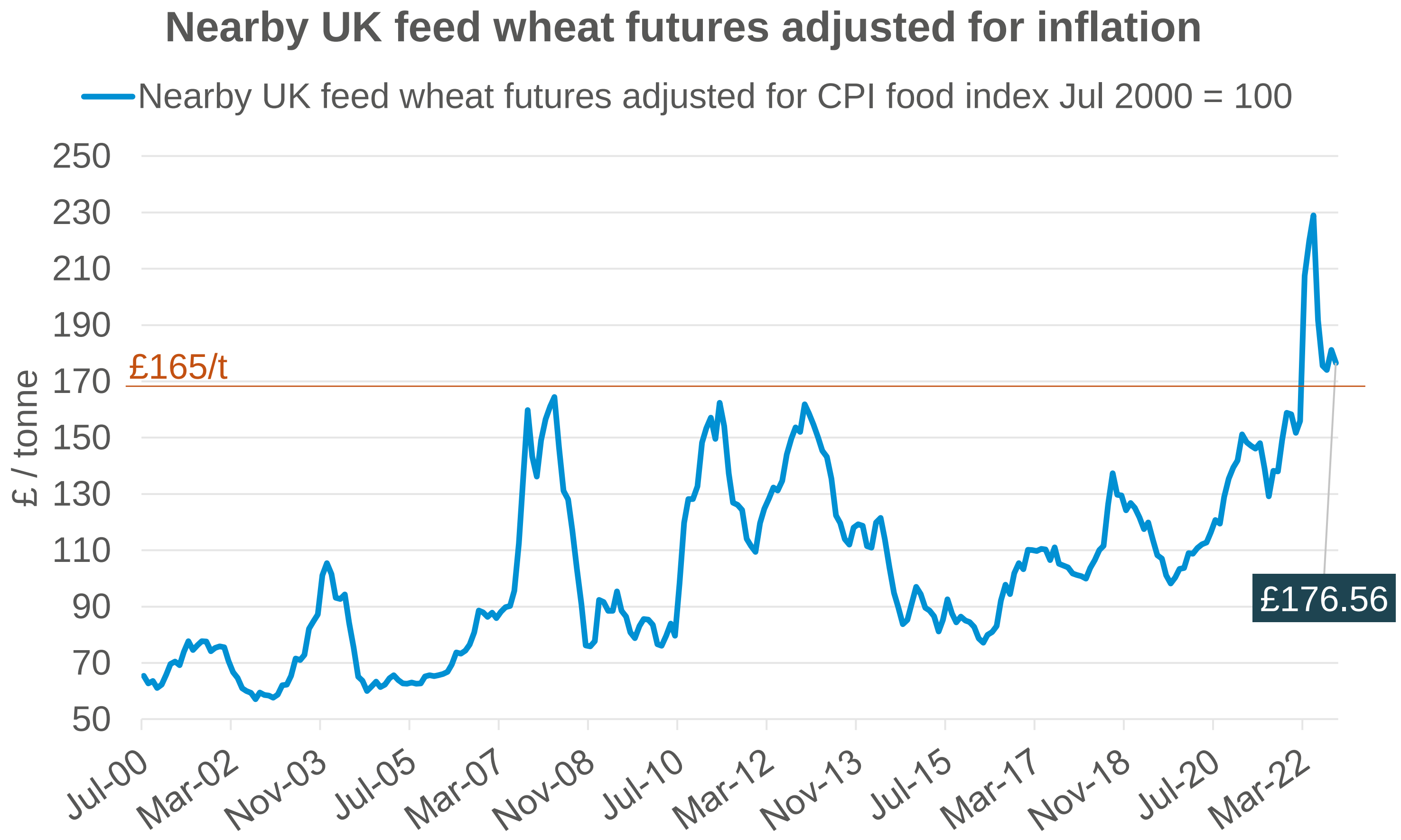
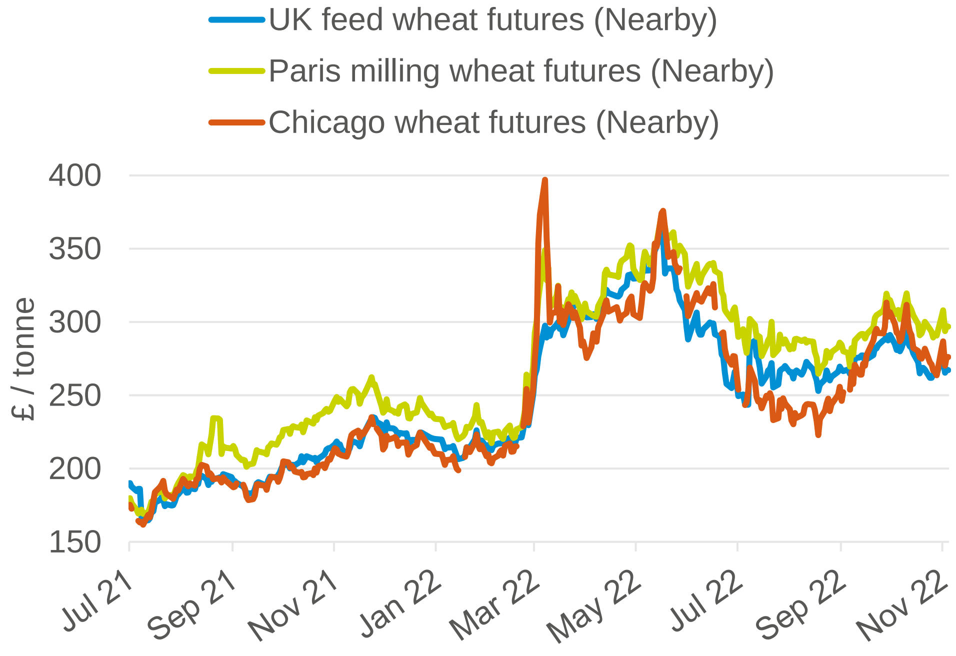
Strong global prices supporting UK prices

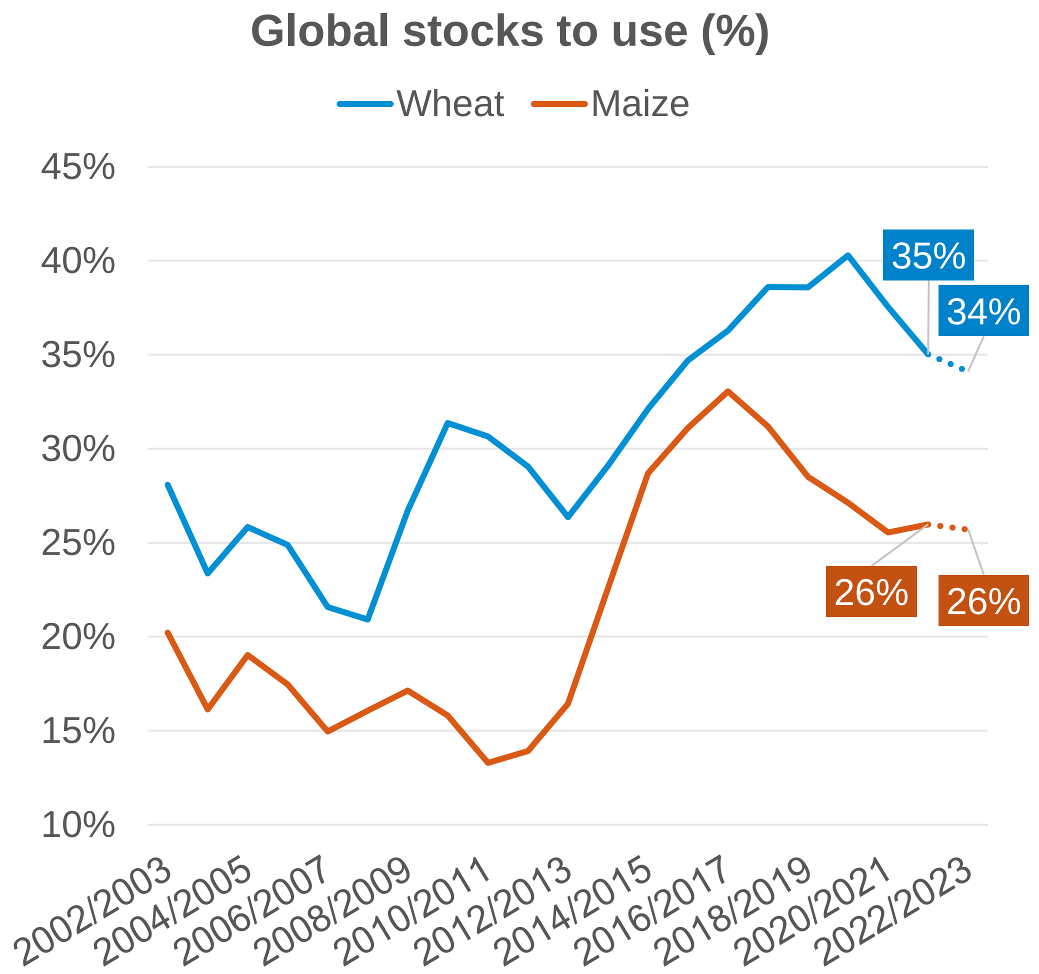


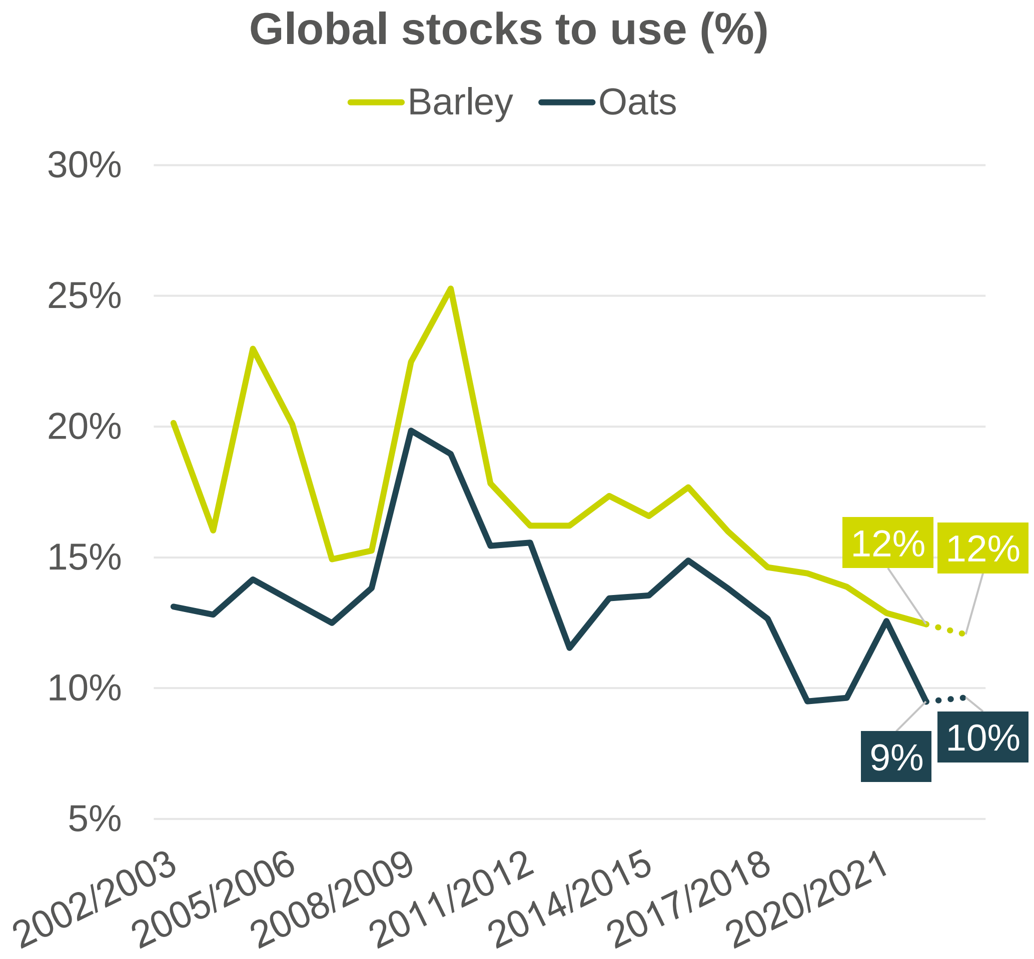


As at today:
£261/t (May-23)

Note: CPI data Jul 2000 to Oct 2022
Source: Office for National Statistics, ICE.

Just another 'normal' year?.... Absolutely not





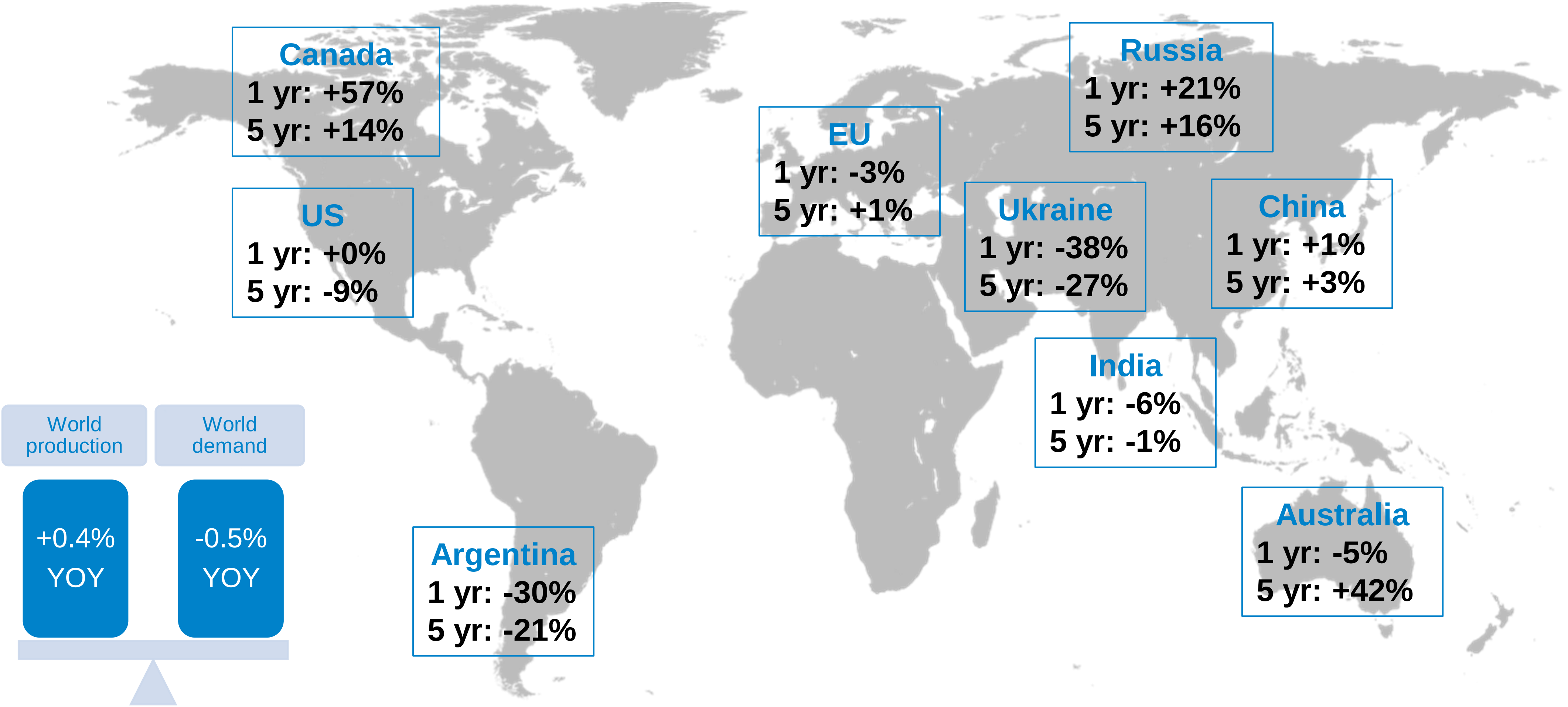
Expect supply volatility to continue

Stocks to use do not reflect market

Note: Stocks to use calculated dividing total global consumption by global ending stocks
Source: USDA

Let's look into supply…

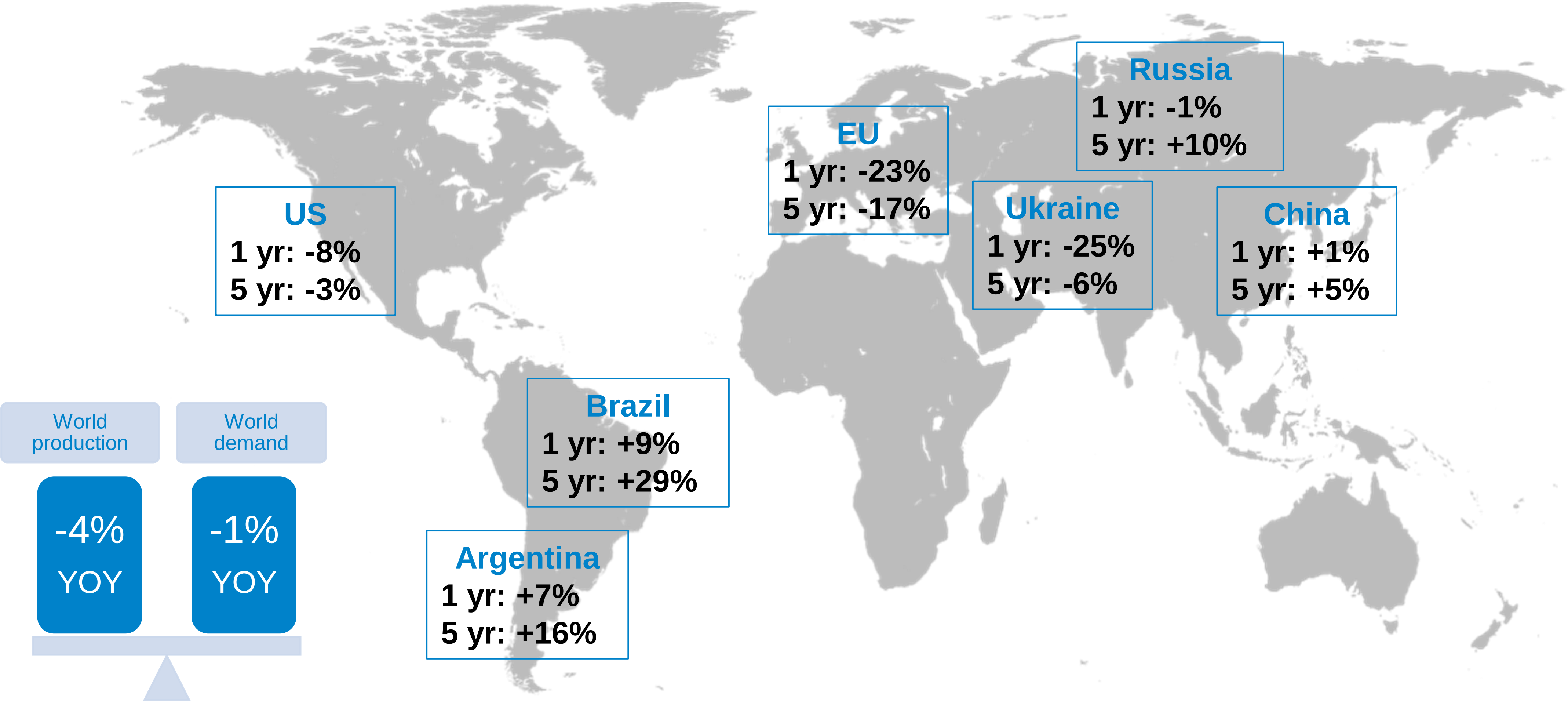
Wheat: average annual production growth %



Source: USDA

Let’s look into supply…

Maize: average annual production growth %



Source: USDA

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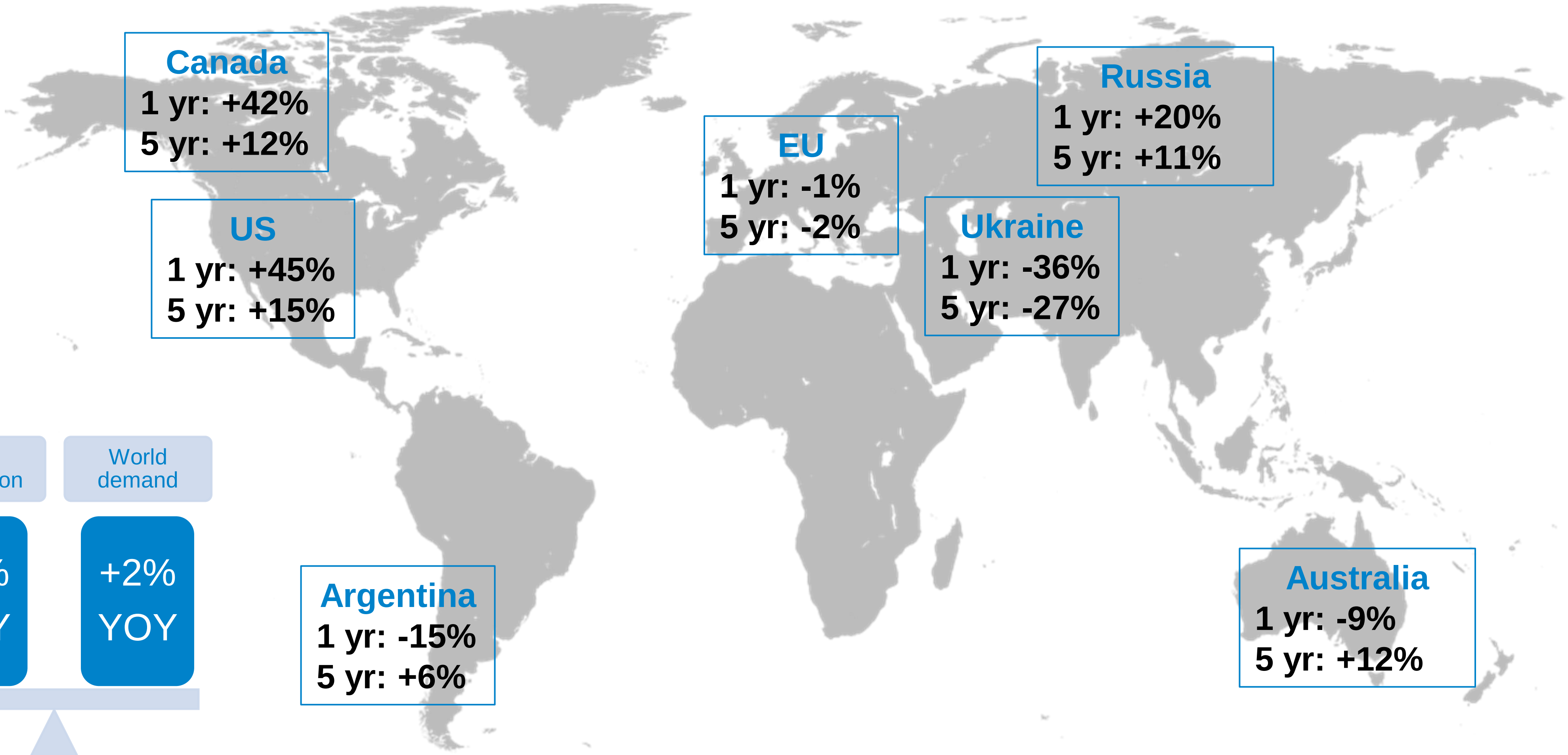
Let’s look into supply…

Barley: average annual production growth %

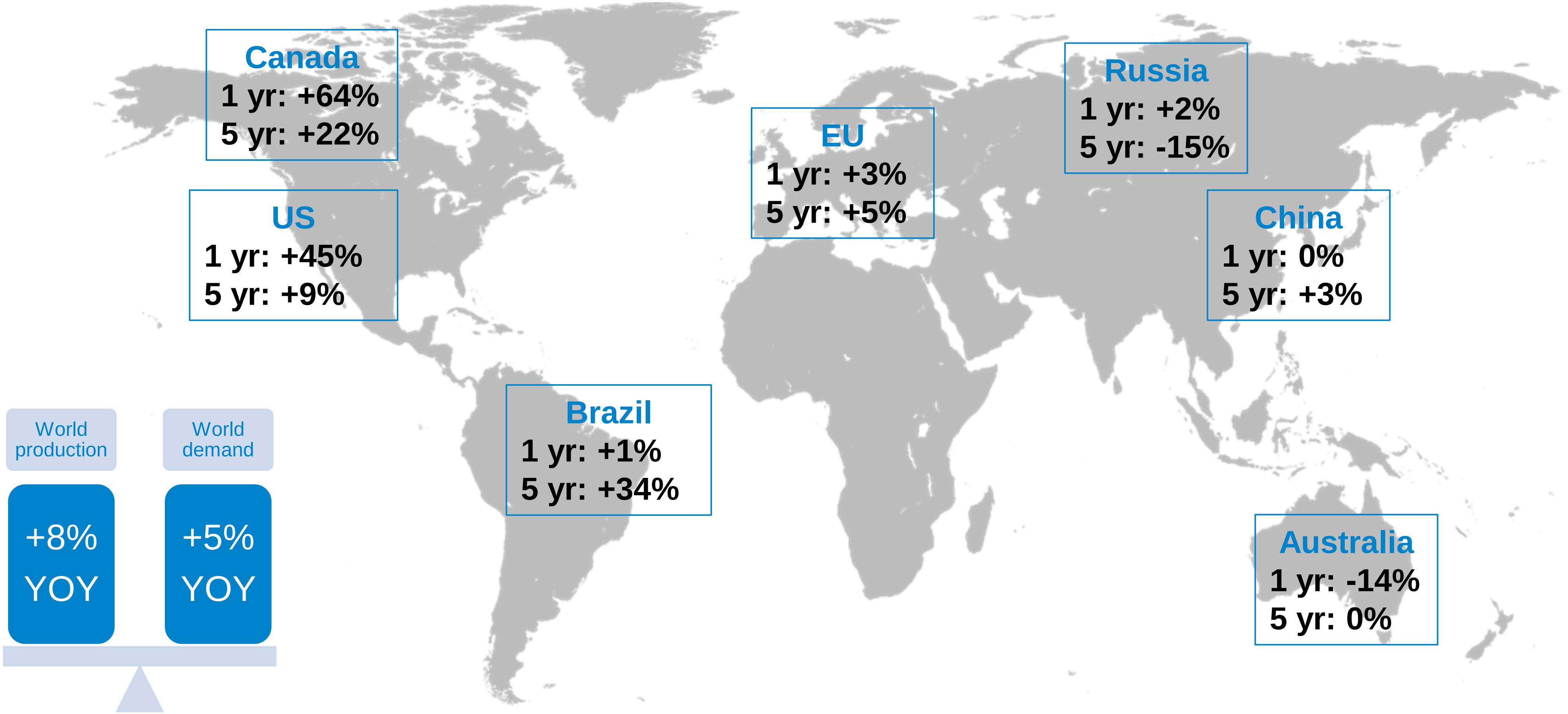


World production	World demand
+2% YOY	+2% YOY

Source: USDA

Let’s look into supply…

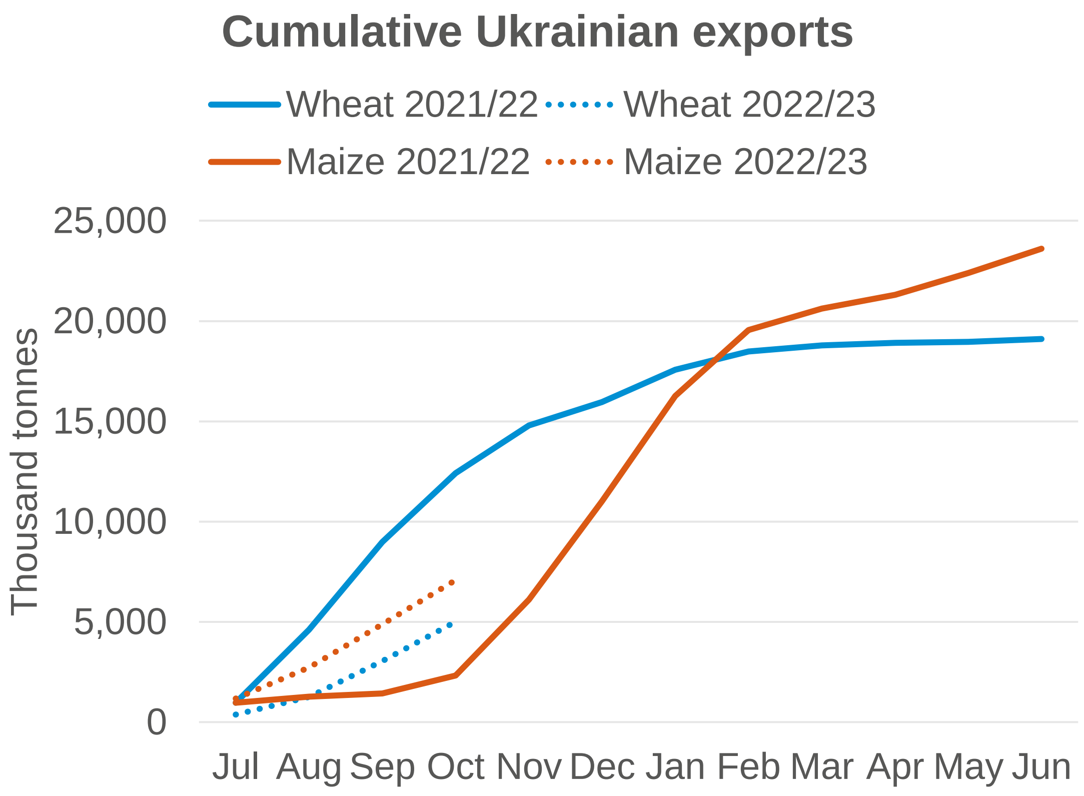
Oats: average annual production growth %



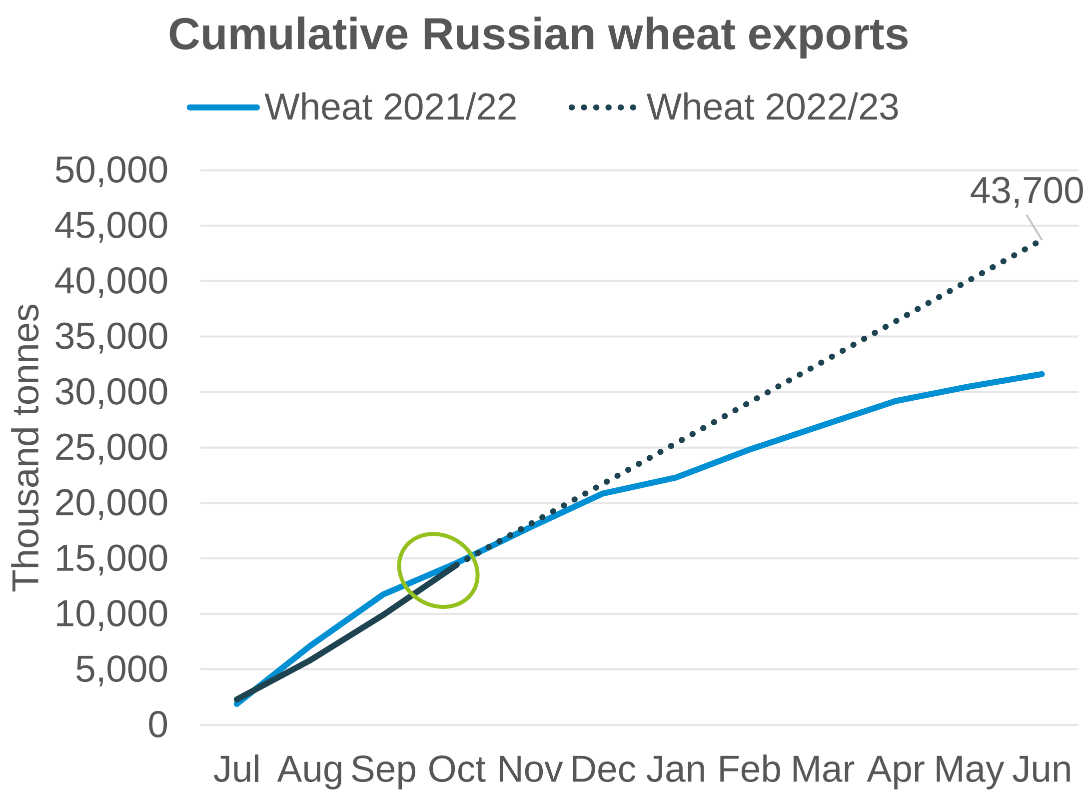
Source: USDA

How is the Black Sea conflict impacting trade?

Update on corridor: Black Sea corridor extended for another 120 days from 18 Nov.

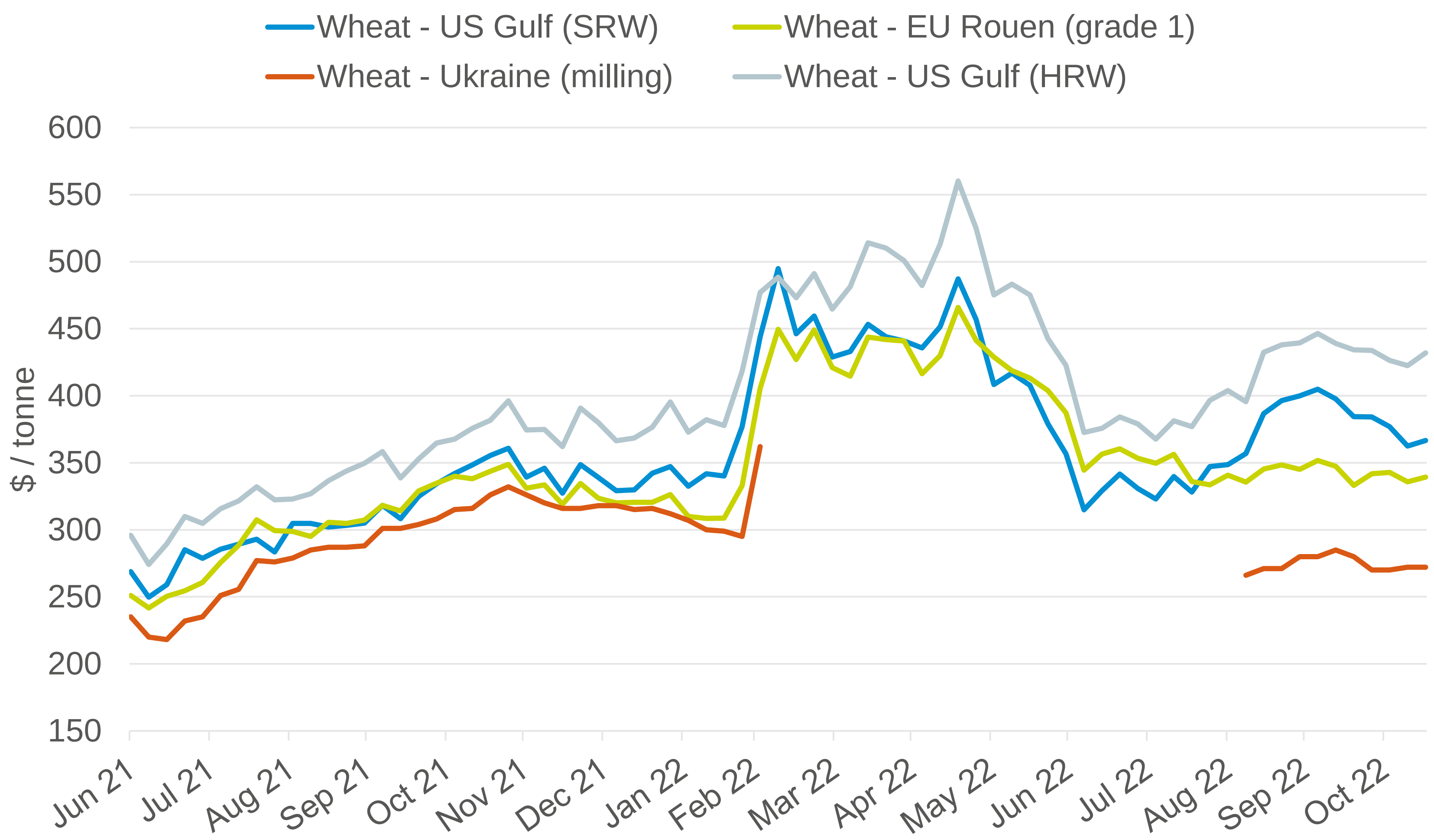


Source: UkrAgroConsult.



Source: SovEcon.

World wheat export prices



Source: International Grains Council, European Commission, USDA.

As at: 18 Nov

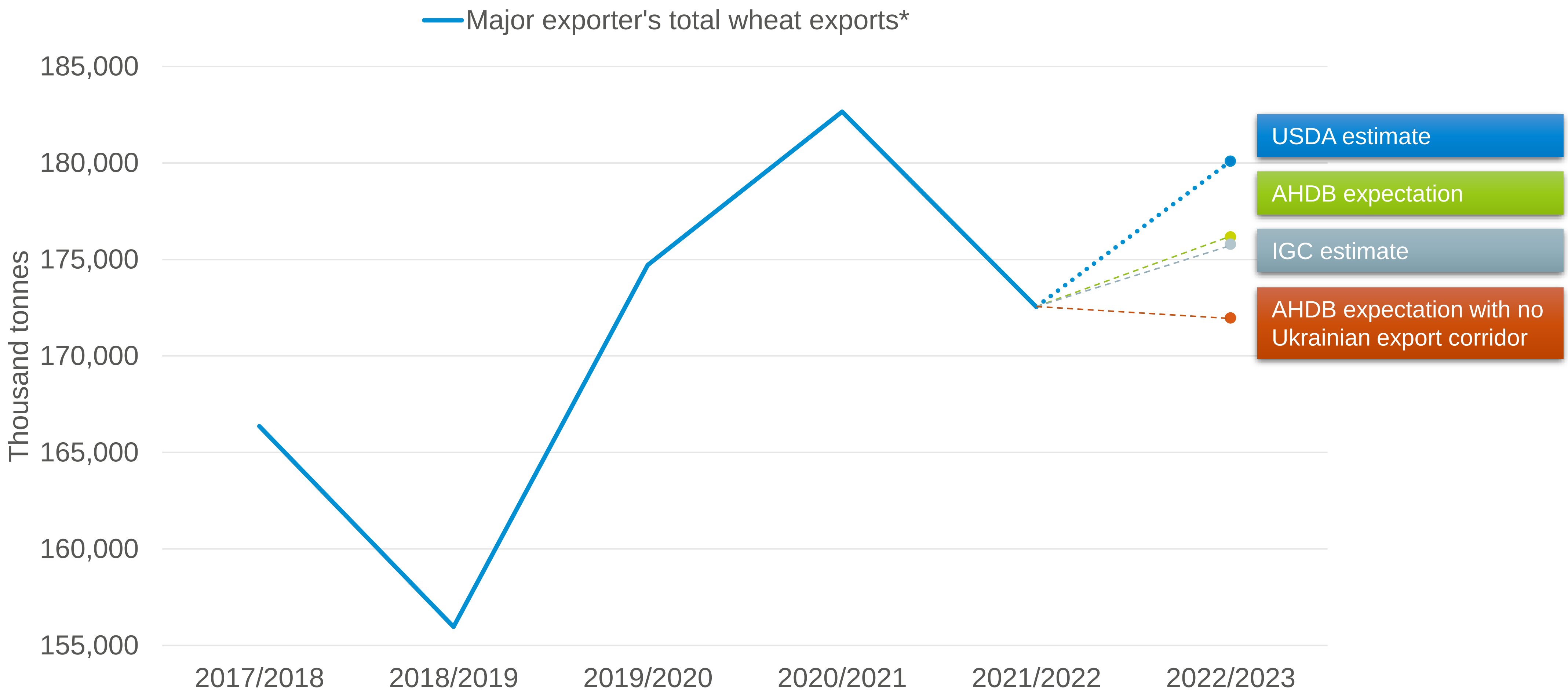
Wheat origin	$ / tonne
US	$417
Argentina	$419
EU	$344
Ukraine*	$272
Russia*	$311

Source: International Grains Council, UkrAgroConsult.

*Notes on FOB prices: Argentina 12.0%, up river; Russia – milling Novorossiysk, 11.5%; EU-France grade 1, Rouen; US- HRW 11.5% Gulf. Ukraine (milling).

*Russia as at 17 Nov. Ukraine as at 16 Nov.

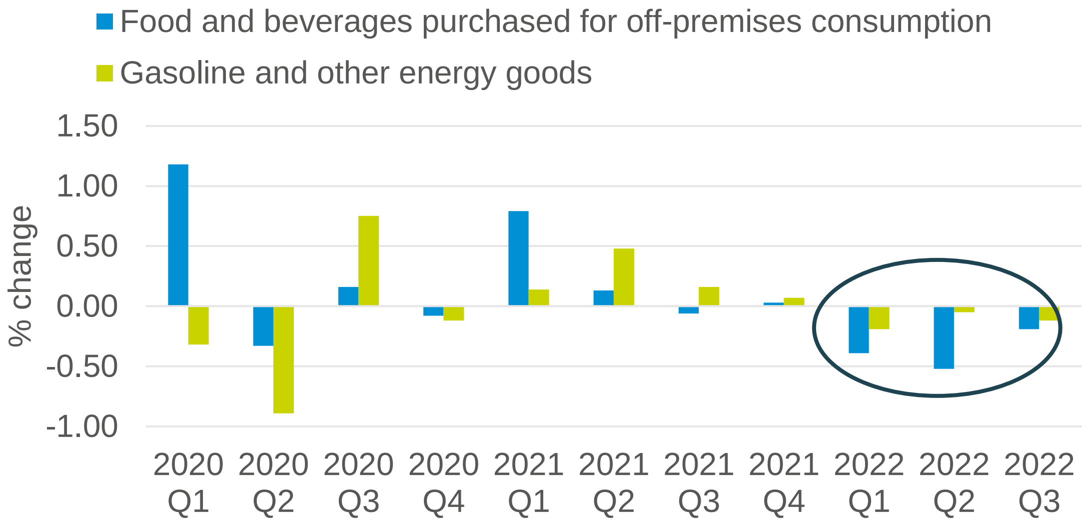
Re-assessing available global wheat exports



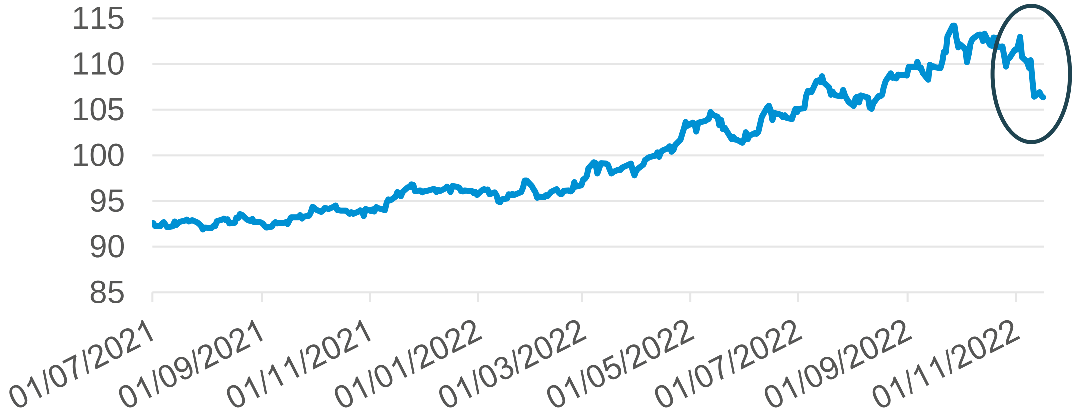
*Major exporters include: Argentina, Australia, Canada, European Union, Russia, Ukraine, United States, Kazakhstan.
Source: International Grains Council, USDA, UkrAgroConsult, SovEcon, Rosario Grain Exchange.

A **recession** to dampen global demand?

US Real GDP – food, energy not performing well

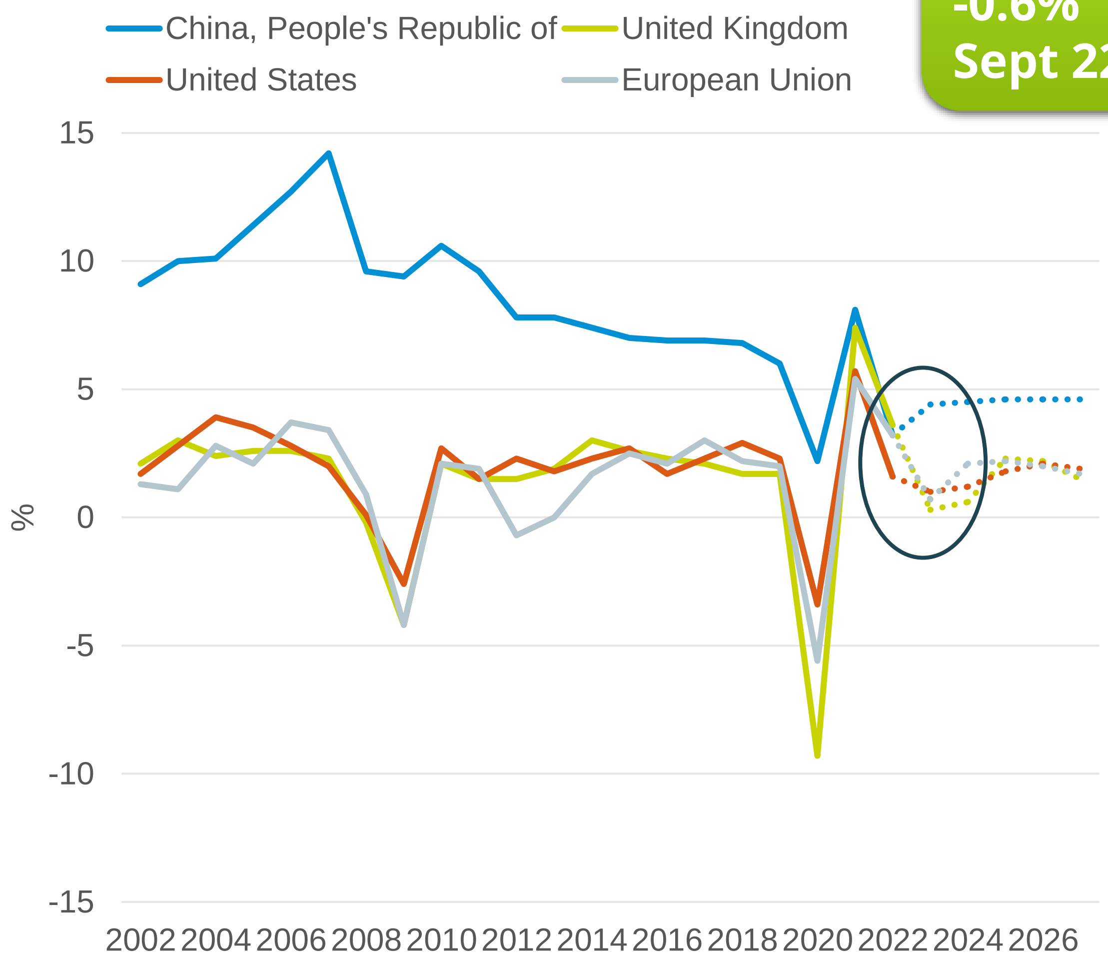


US Dollar Index



Source: US Bureau of Economic Analysis, Refinitiv.

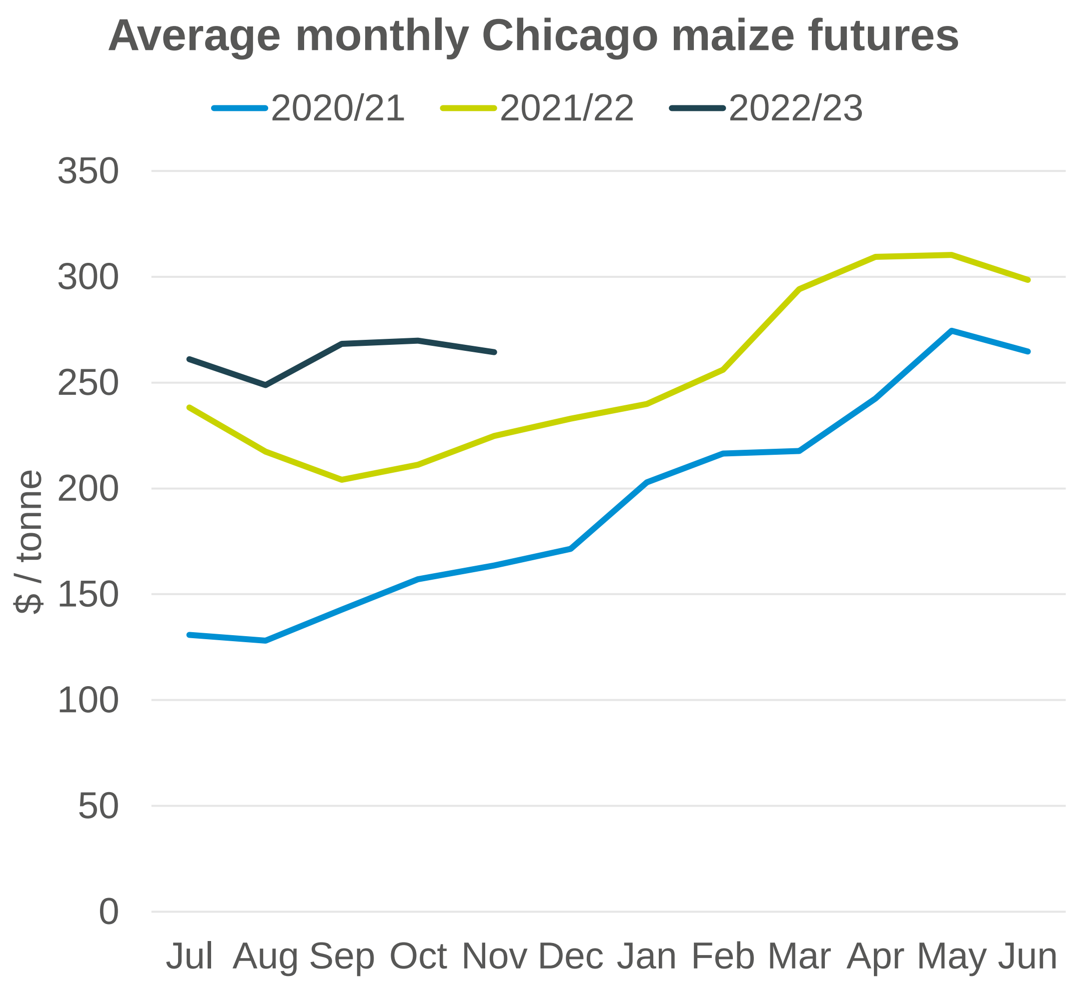
Annual Real GDP growth



UK GDP
-0.6%
Sept 22

Source: International Monetary Fund.

Maize continue to be a strong base to market?



Source: CME.

Support

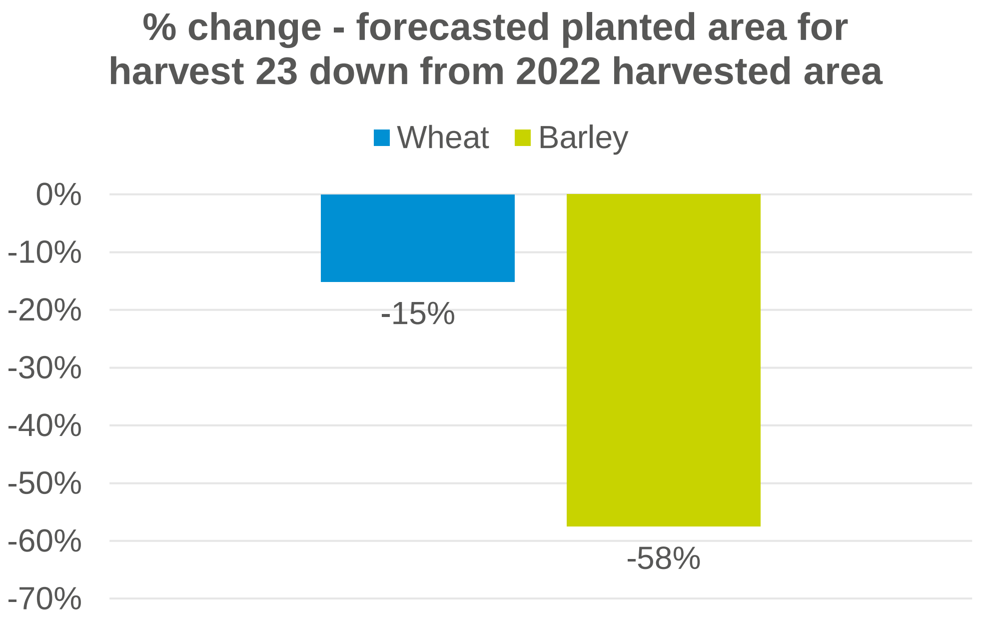
- Strong US ethanol production/exports
- War in Ukraine
- Dry conditions in Argentina - La Niña?

Pressure

- Large Brazilian crop
- EU ethanol margins
- Poor US export sales
- Recession?

Conclusion – tight supply keeps prices volatile

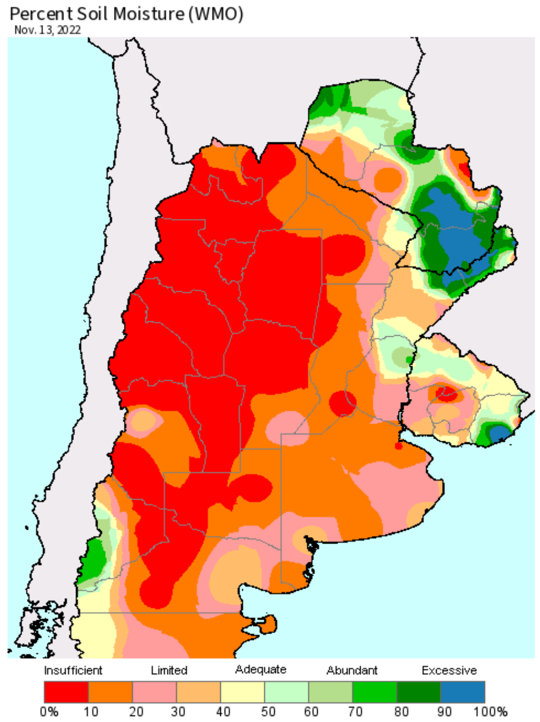
Tight global supply to support prices → Recession will change balance → Prices to remain volatile



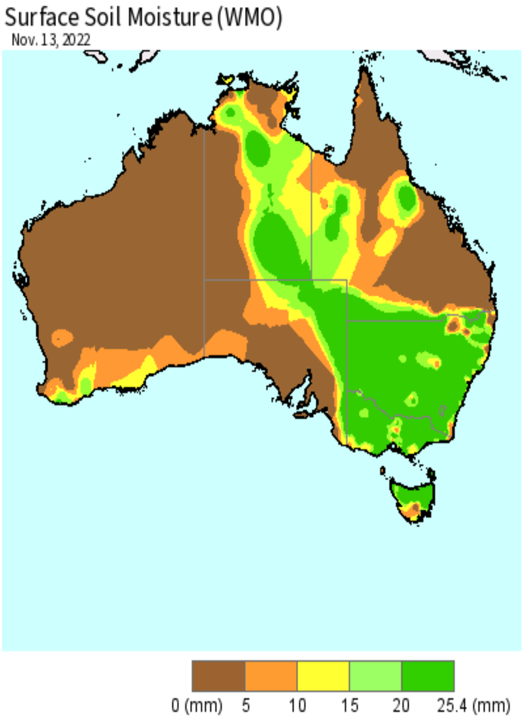
Source: UkrAgroConsult

Things to change this balance?

Argentinian dryness



Australian quality



But big Brazilian crop…

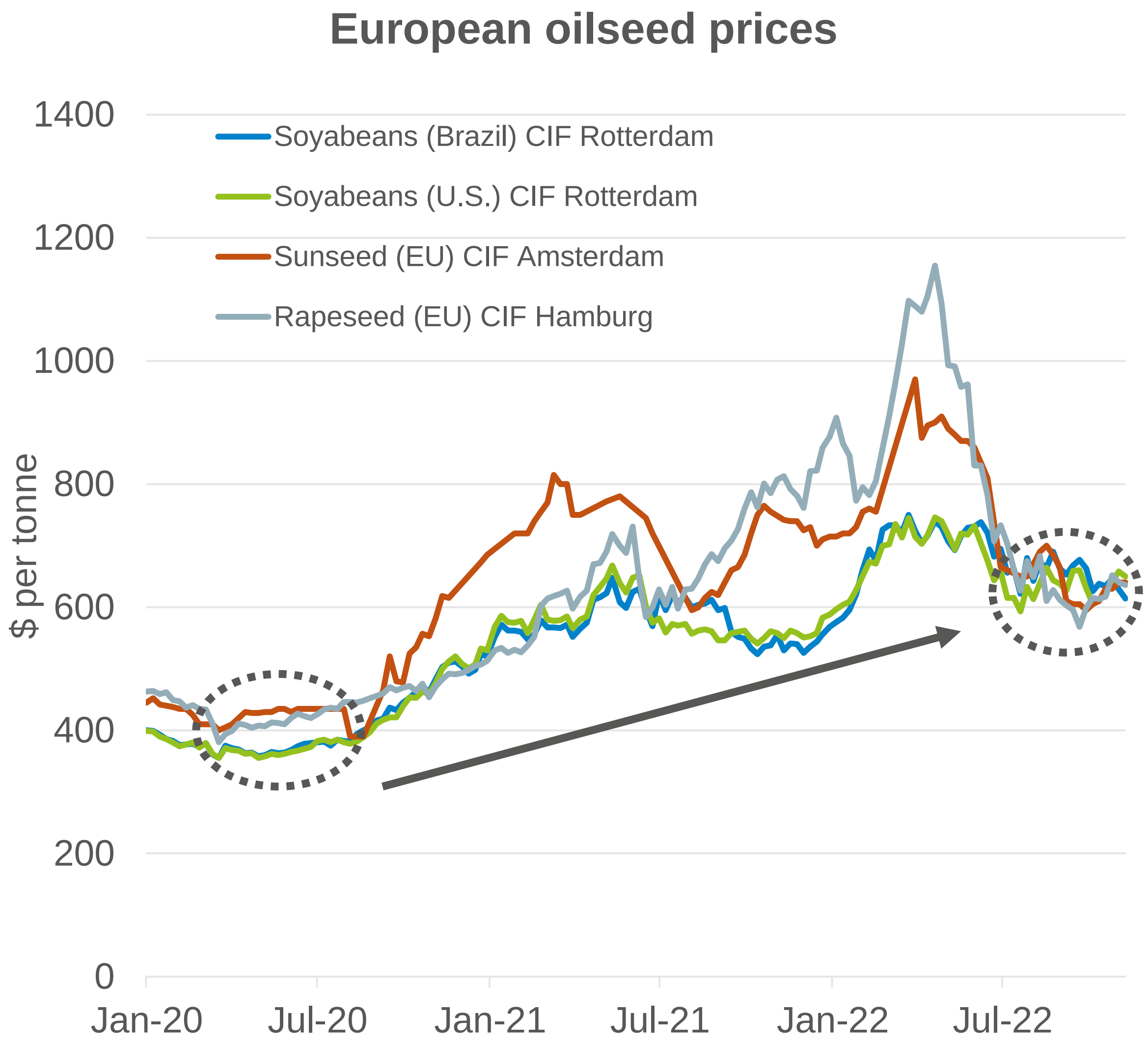
Source: USDA Foreign Agricultural Service

Global oilseed outlook

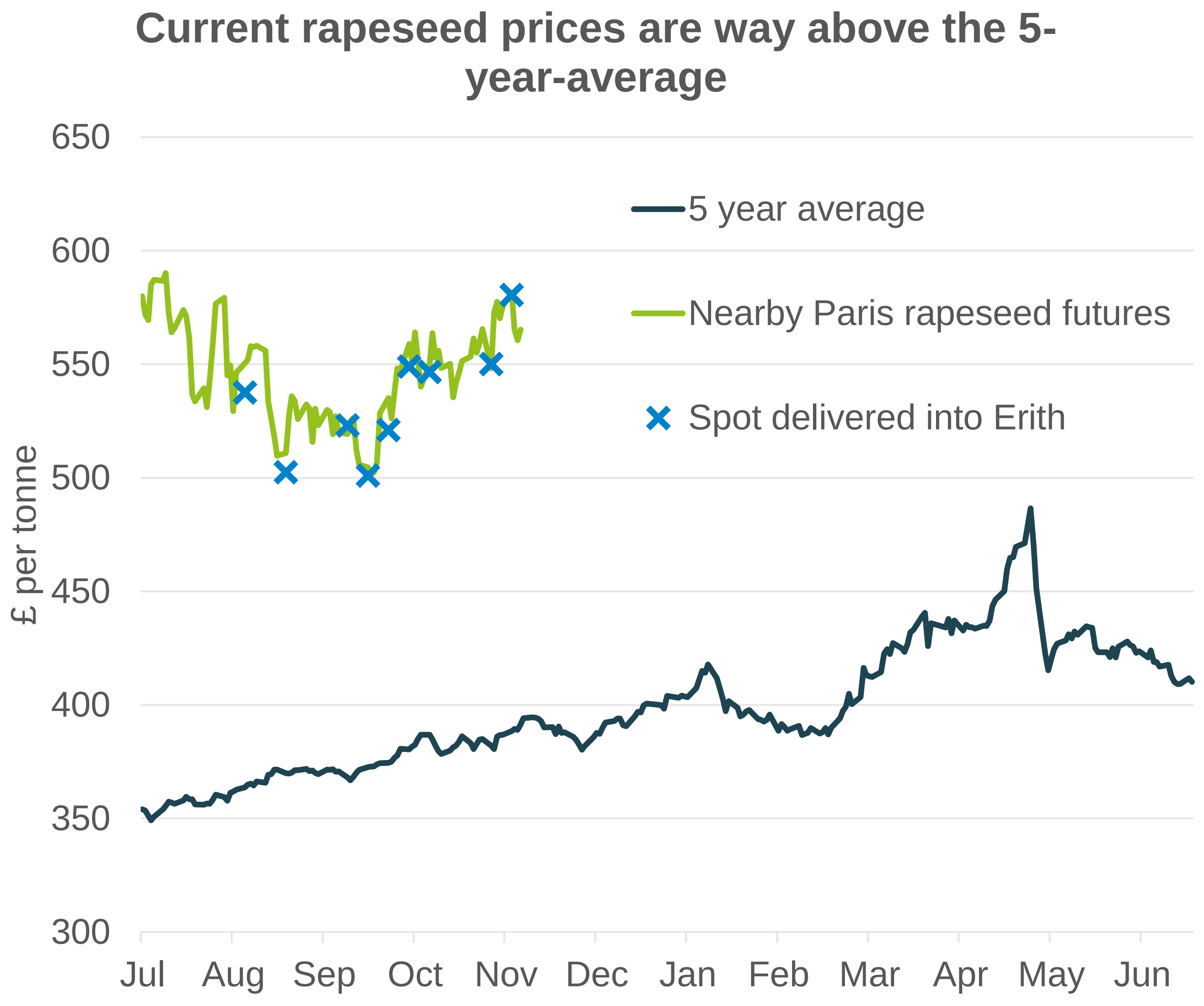
Soyabeans; a key influencer in oilseed markets that will drive your rapeseed price

Anthony Speight, Senior Analyst – Cereals and Oilseeds

Strong support in the oilseed complex

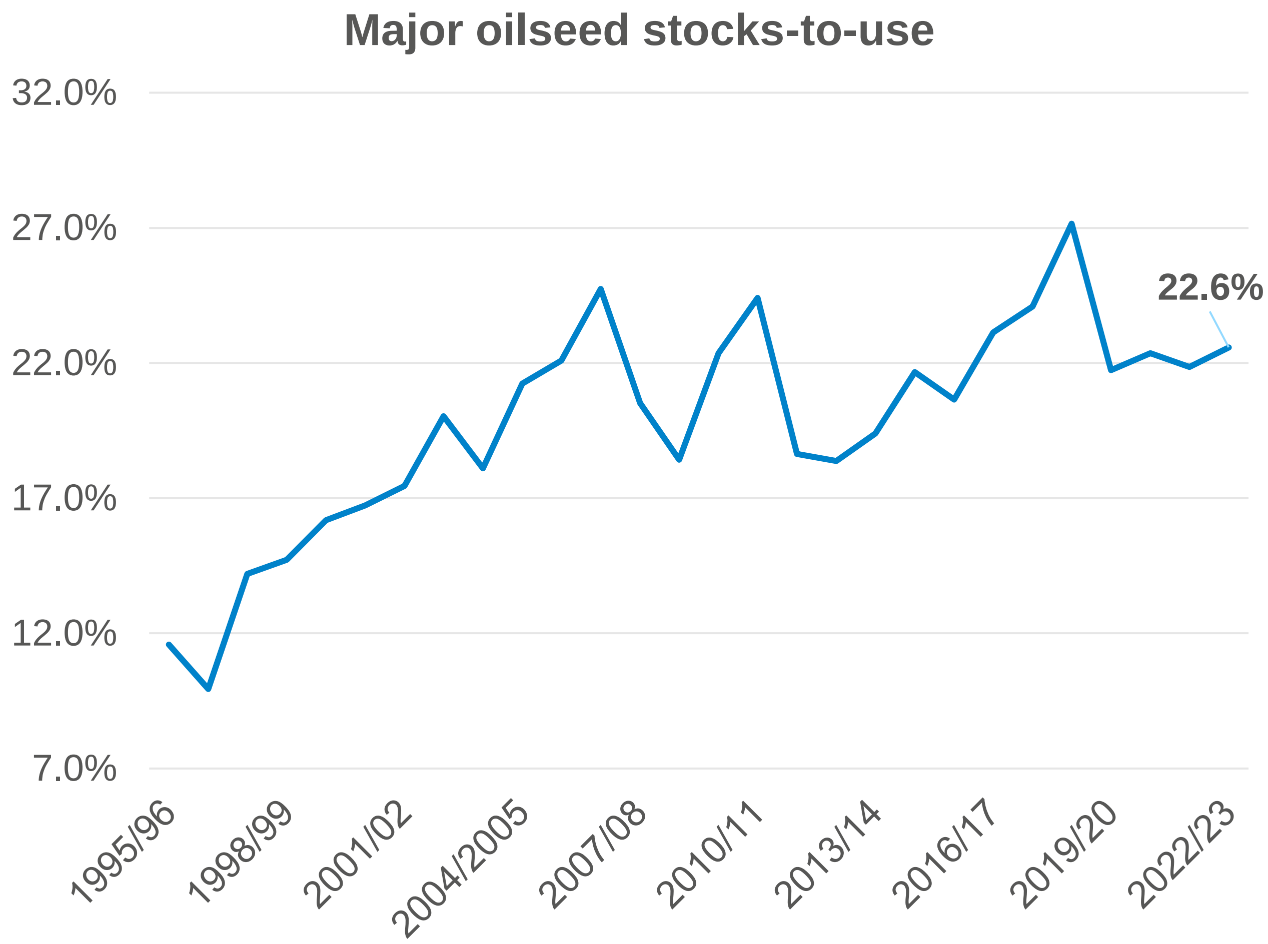


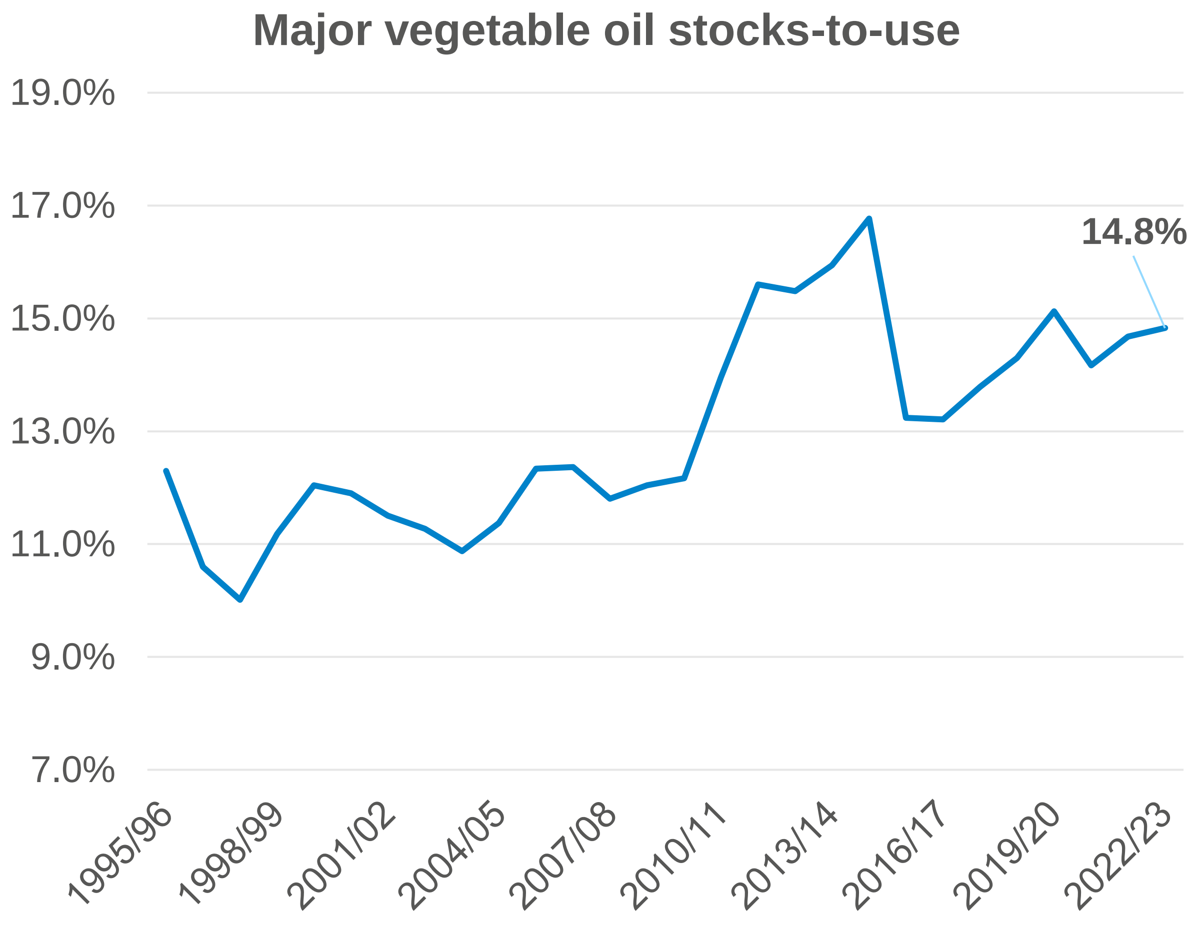
Souce: OilWorld.biz



Source: Euronext – Refinitiv, AHDB delivered survey

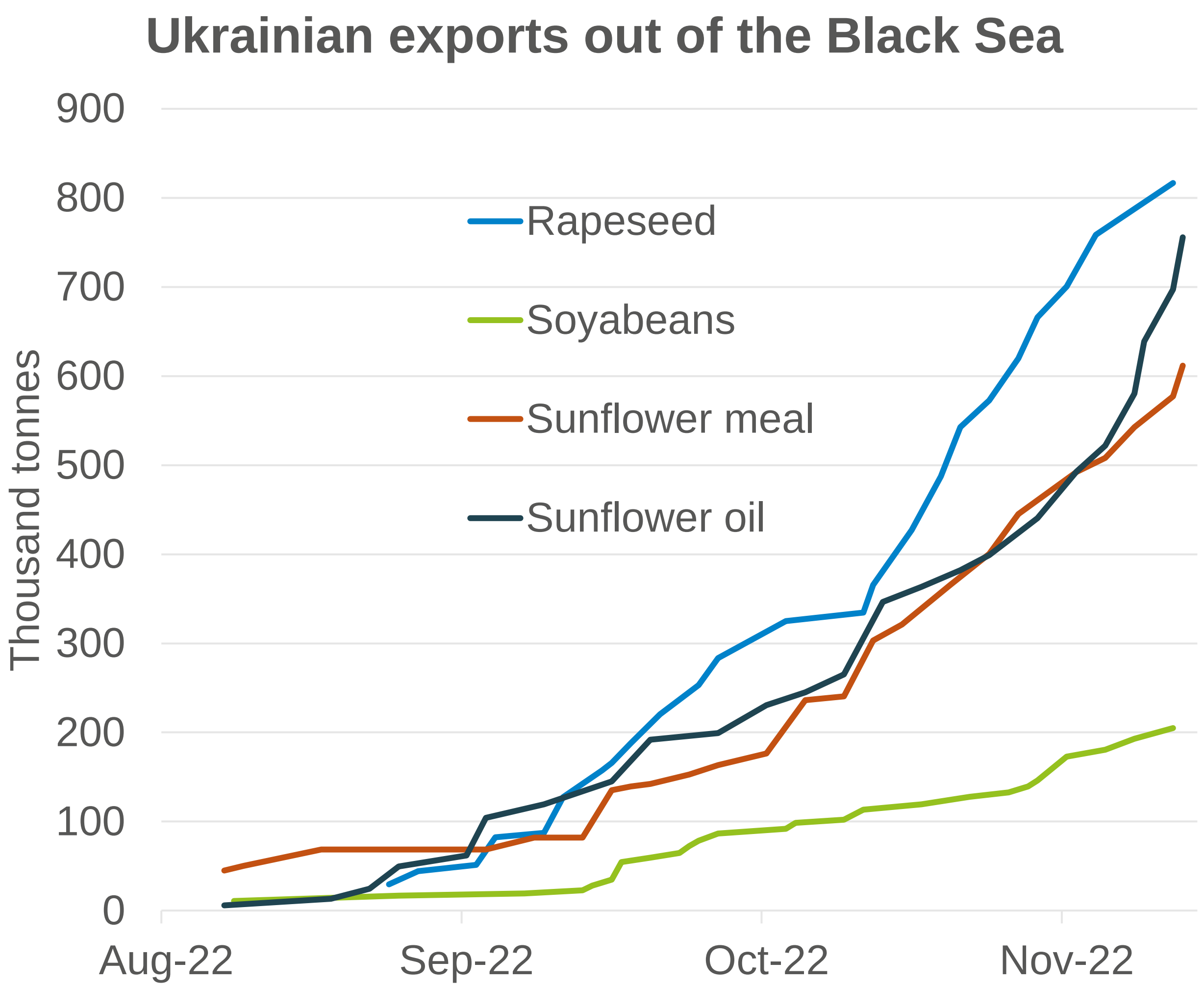
Stocks to use up, but could they be higher?





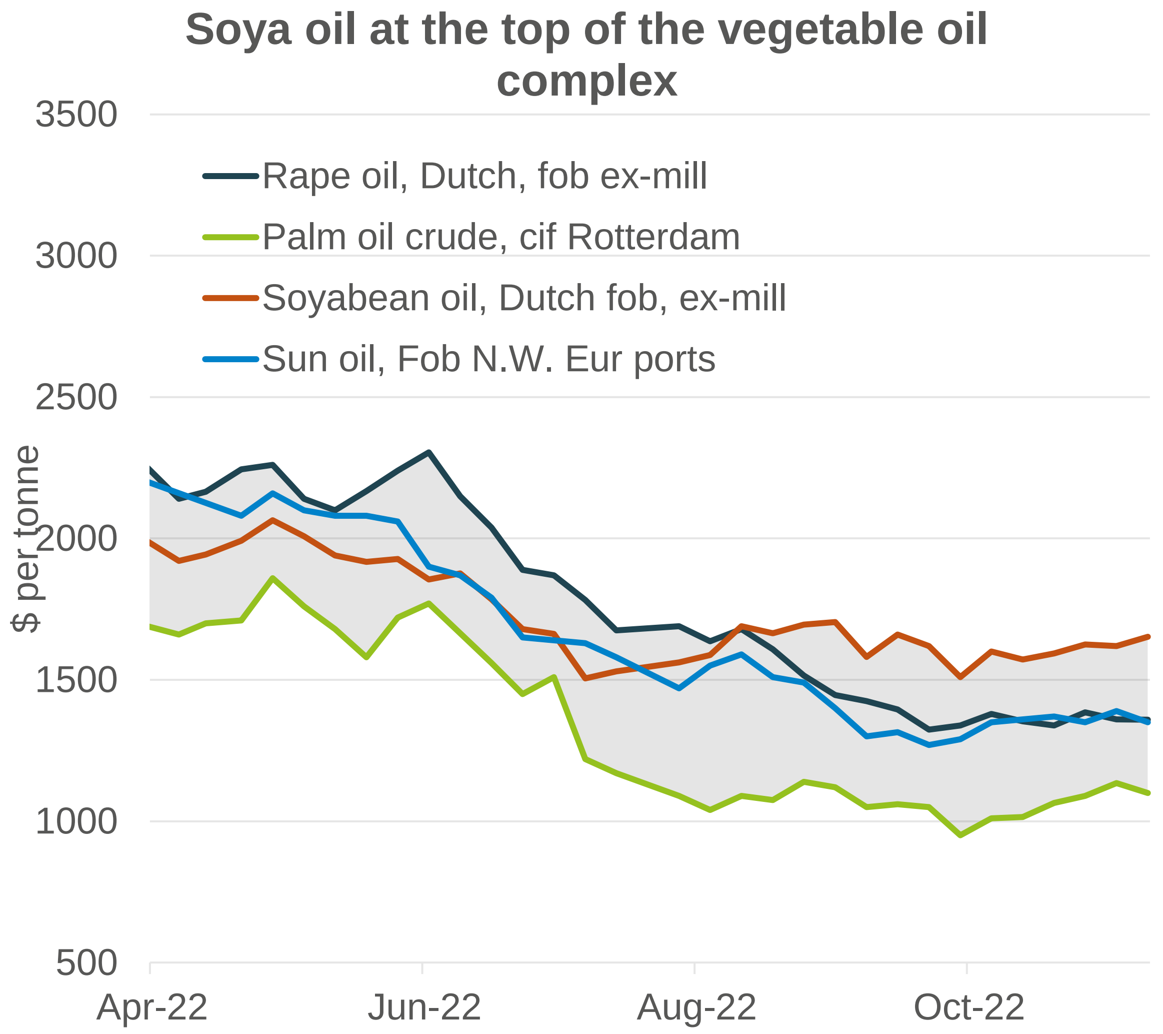
Source: USDA
Note: Stocks to use calculated dividing total global consumption by global ending stocks
Major vegetable oils – palm, sun, soya, rape.
Major oilseed – sun, soya, rape

Are Ukraine's exports key to the oilseed market?

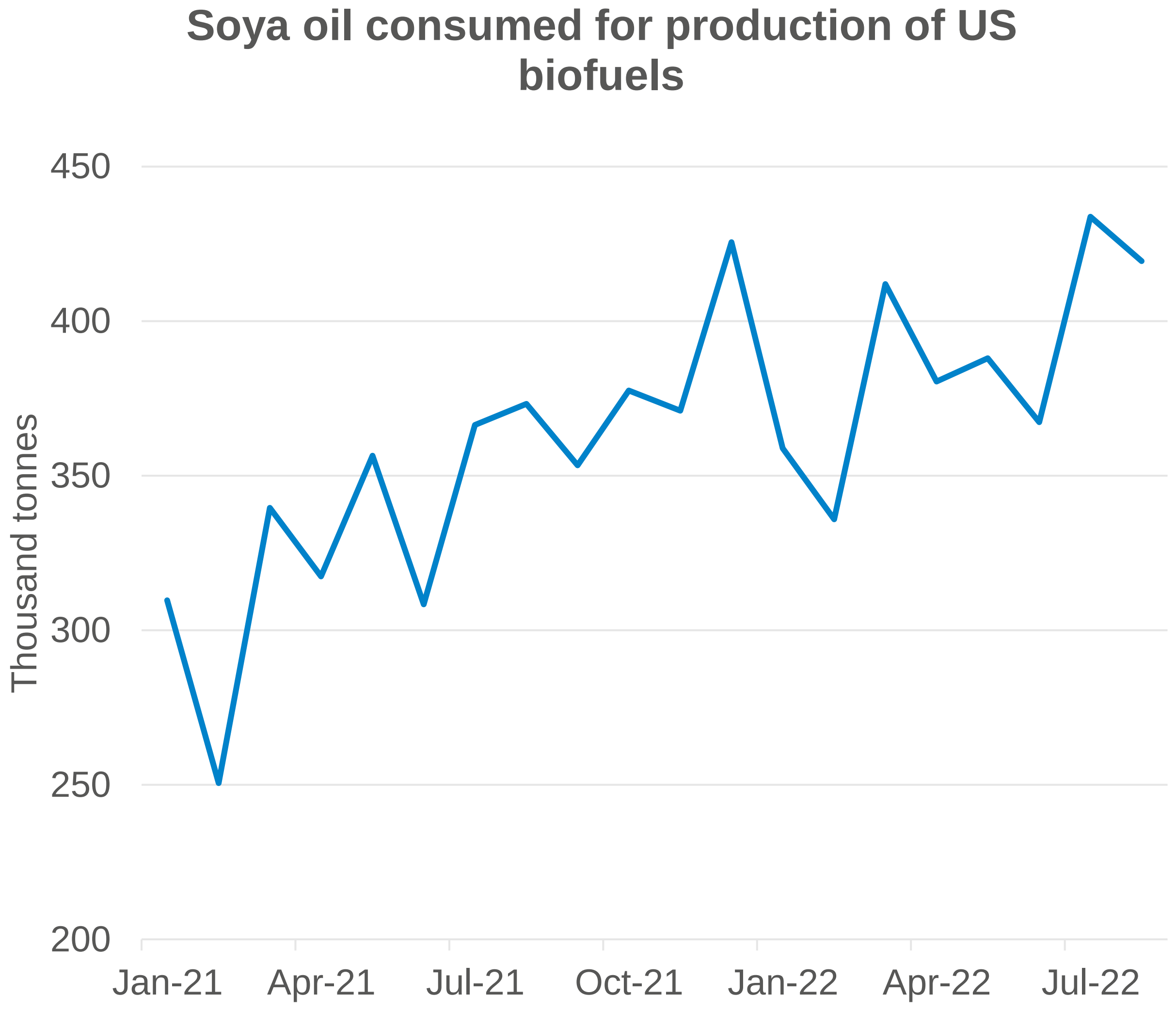


Source: UN vessel movements - Black Sea Grain Initiative Joint Coordination Centre – Data up until 14th November 2022

Biofuels to influence the market

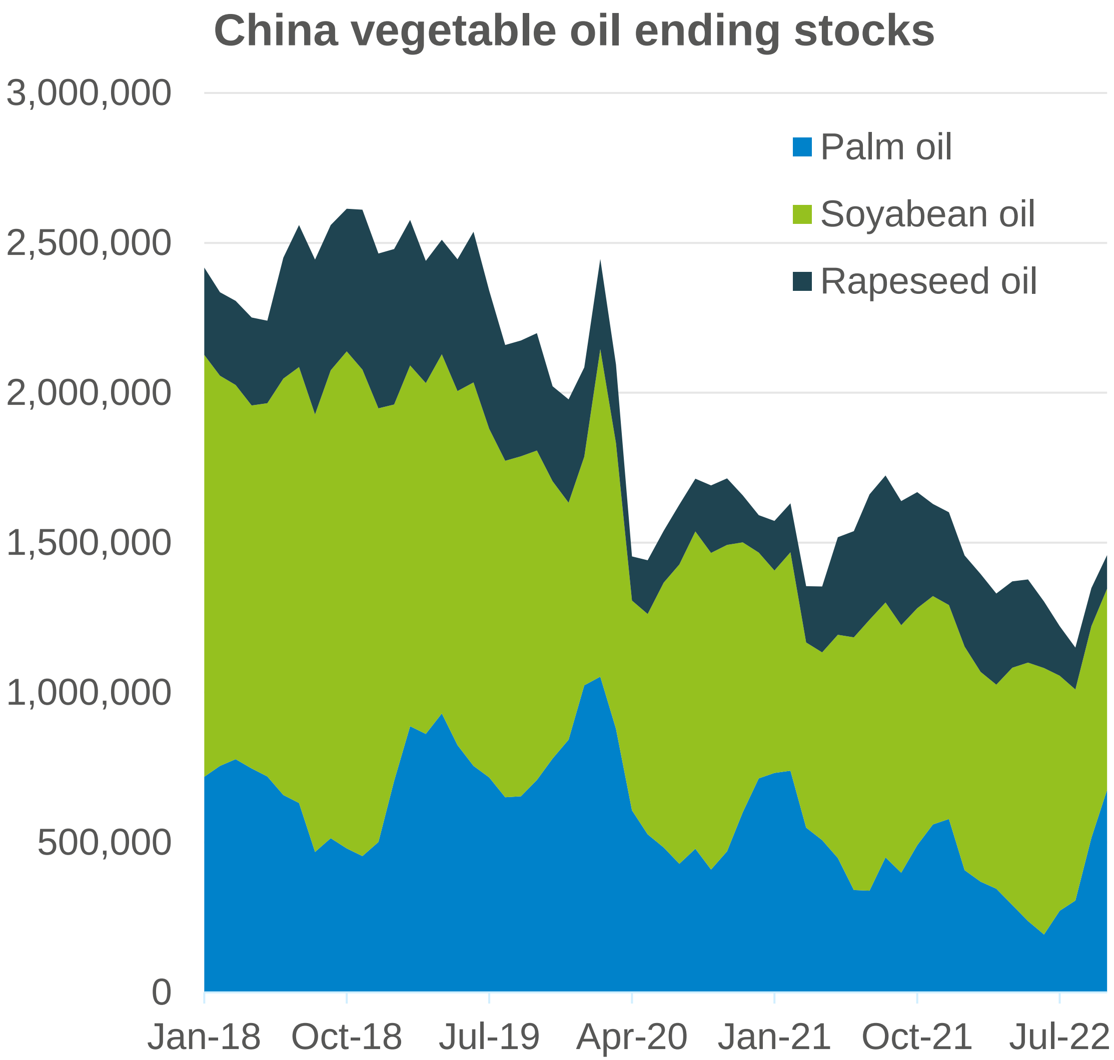


Source: oilworld.biz

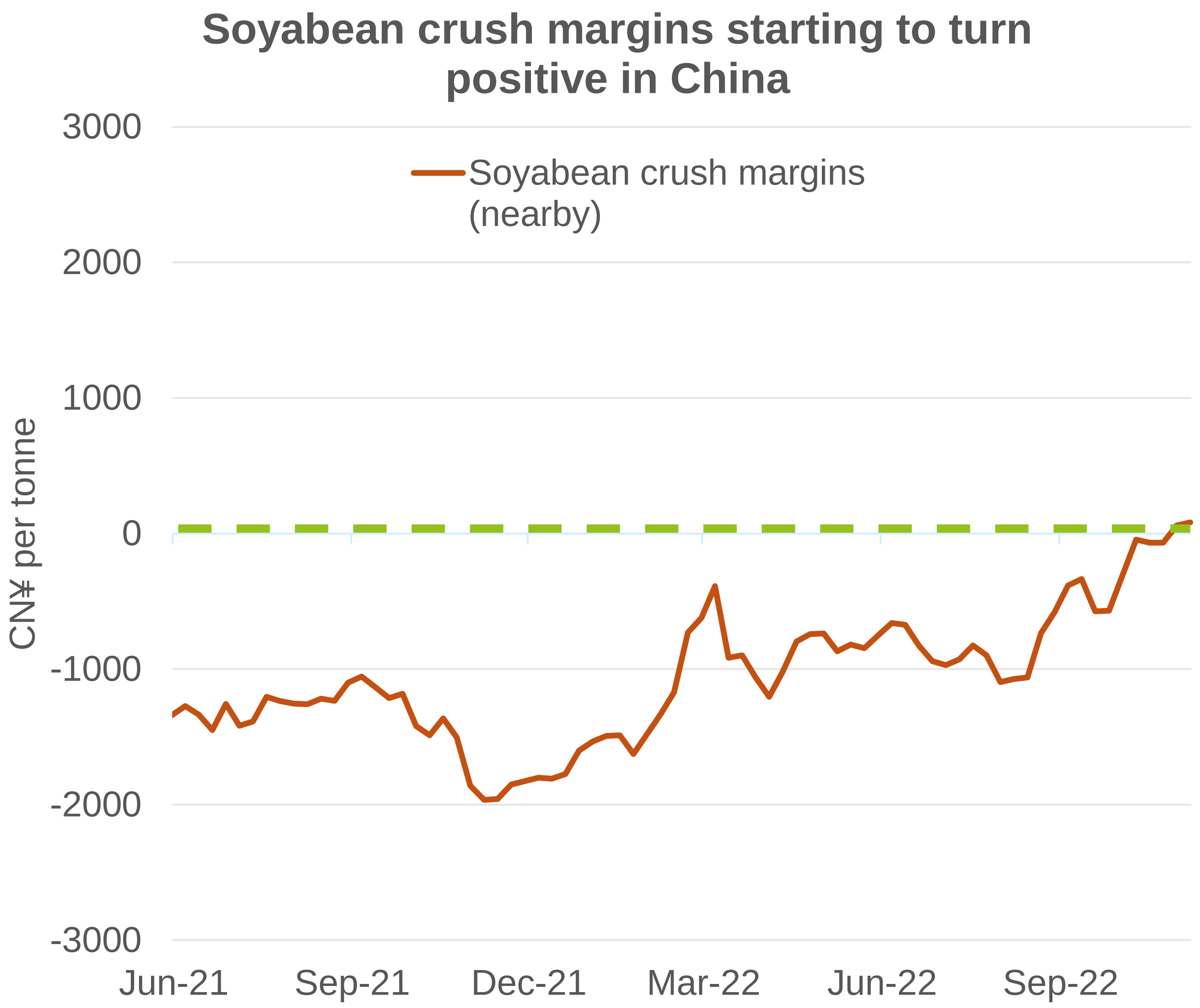


Source: U.S. Energy Information Administration

Chinese demand will set market sentiment

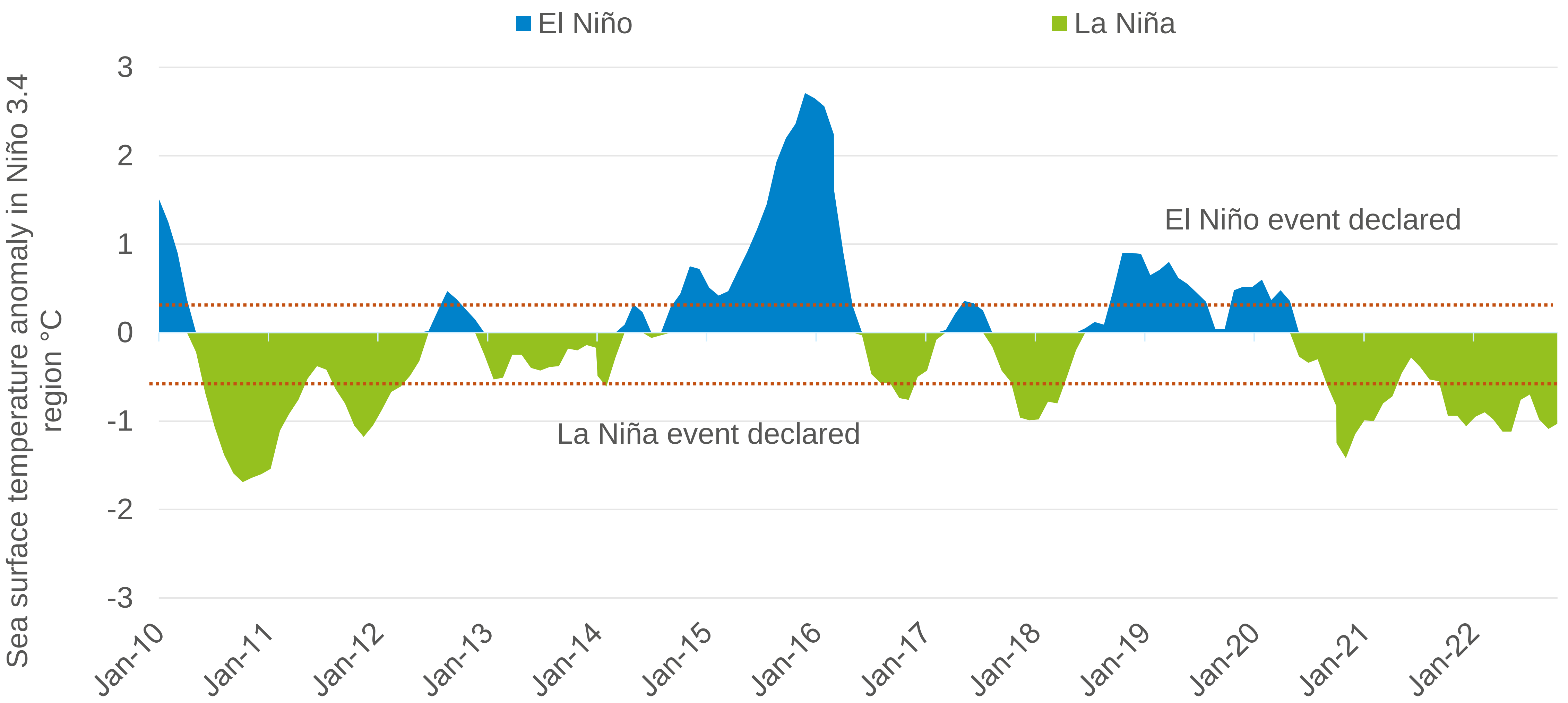


Source: MPOC Market Intelligence



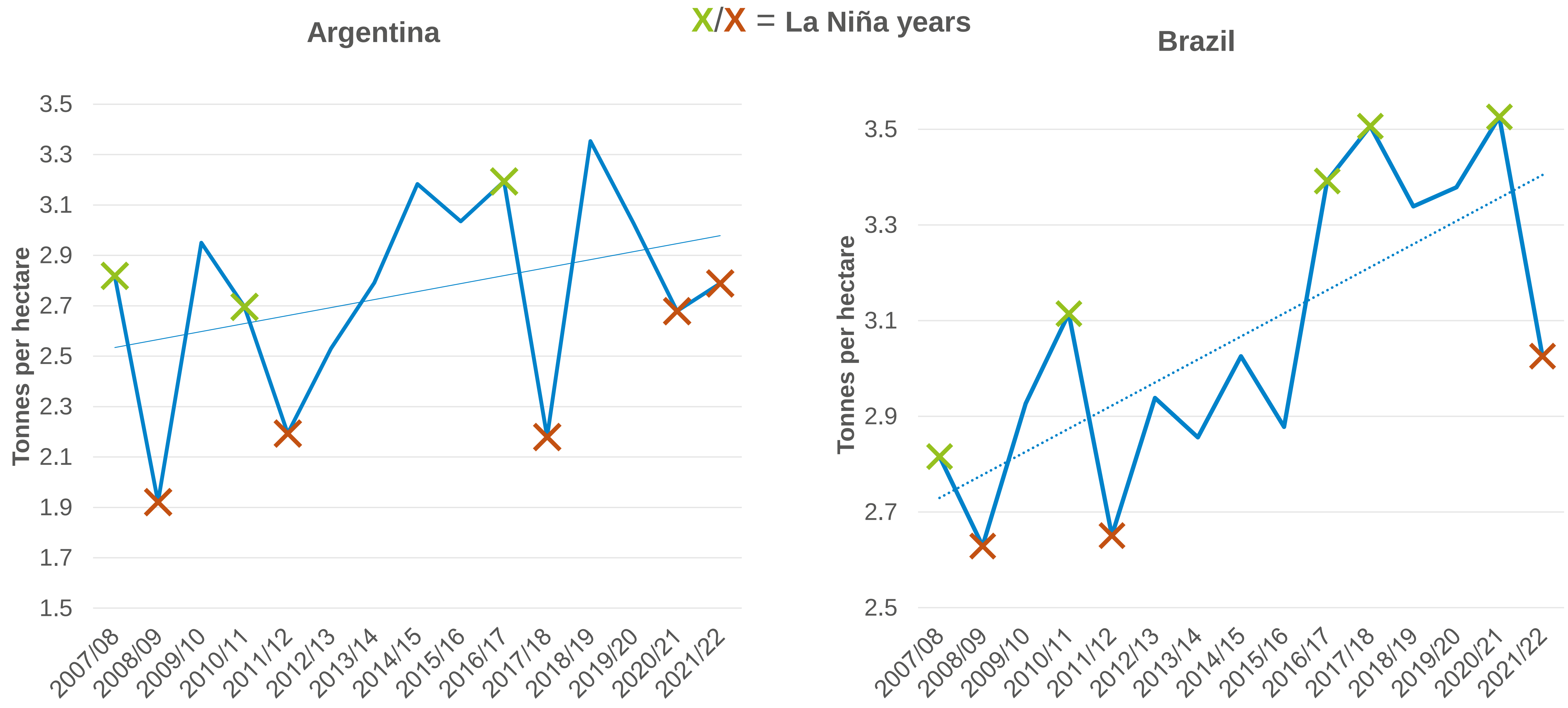
Source: DCE - Refinitiv

We are entering a third successive La Niña



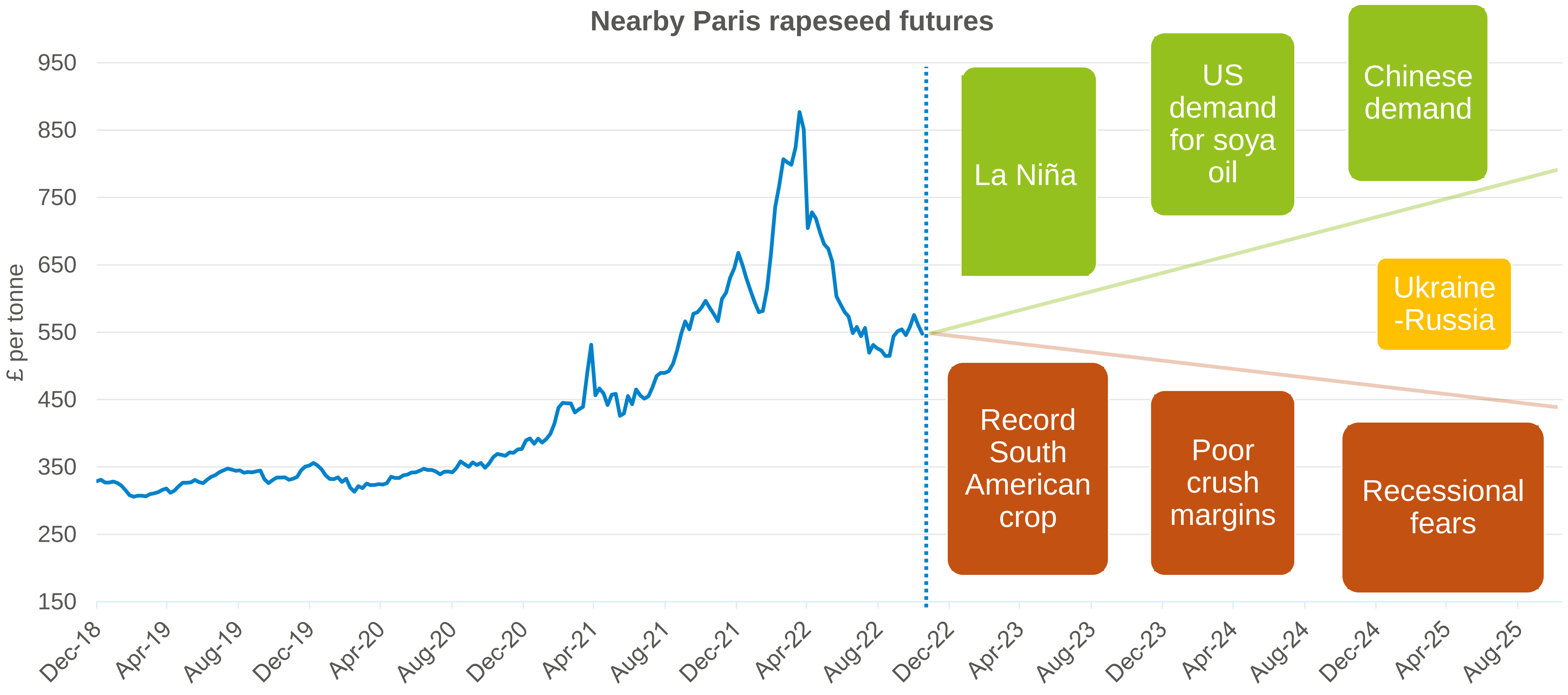
Source: National Oceanic and Atmospheric Administration

South American soyabean yields



Source: Buenos Aires Grain Exchange, Conab.

What is going to happen to rapeseed prices?



Source: Euronext - Refinitiv

UK focus

Millie Askew, Lead Analyst – Cereals and Oilseeds

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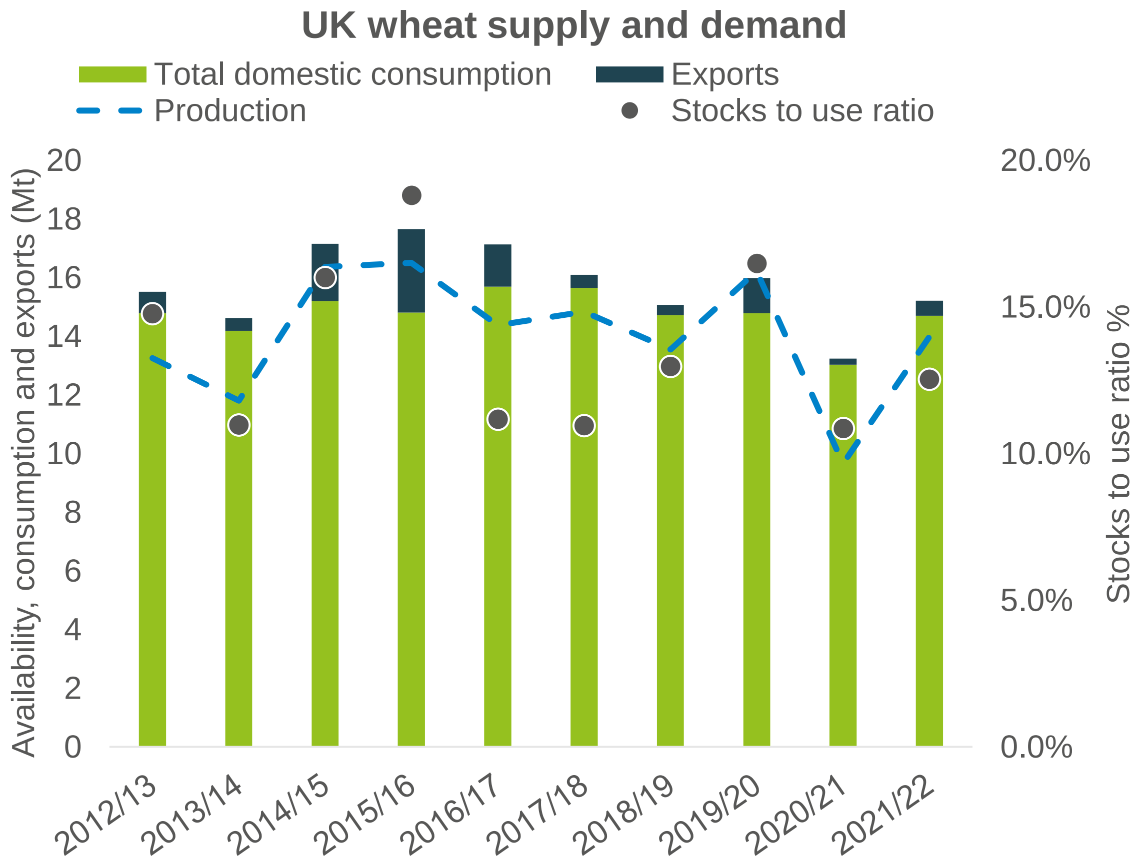
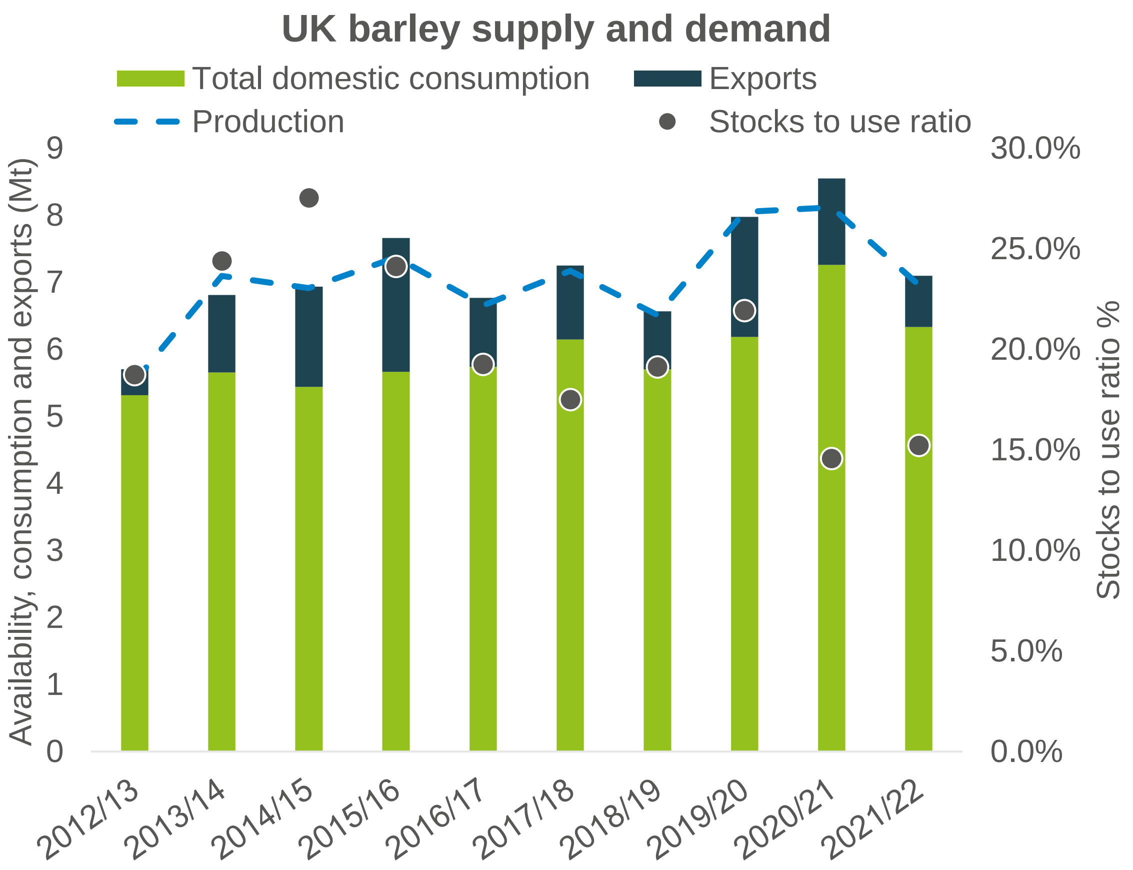
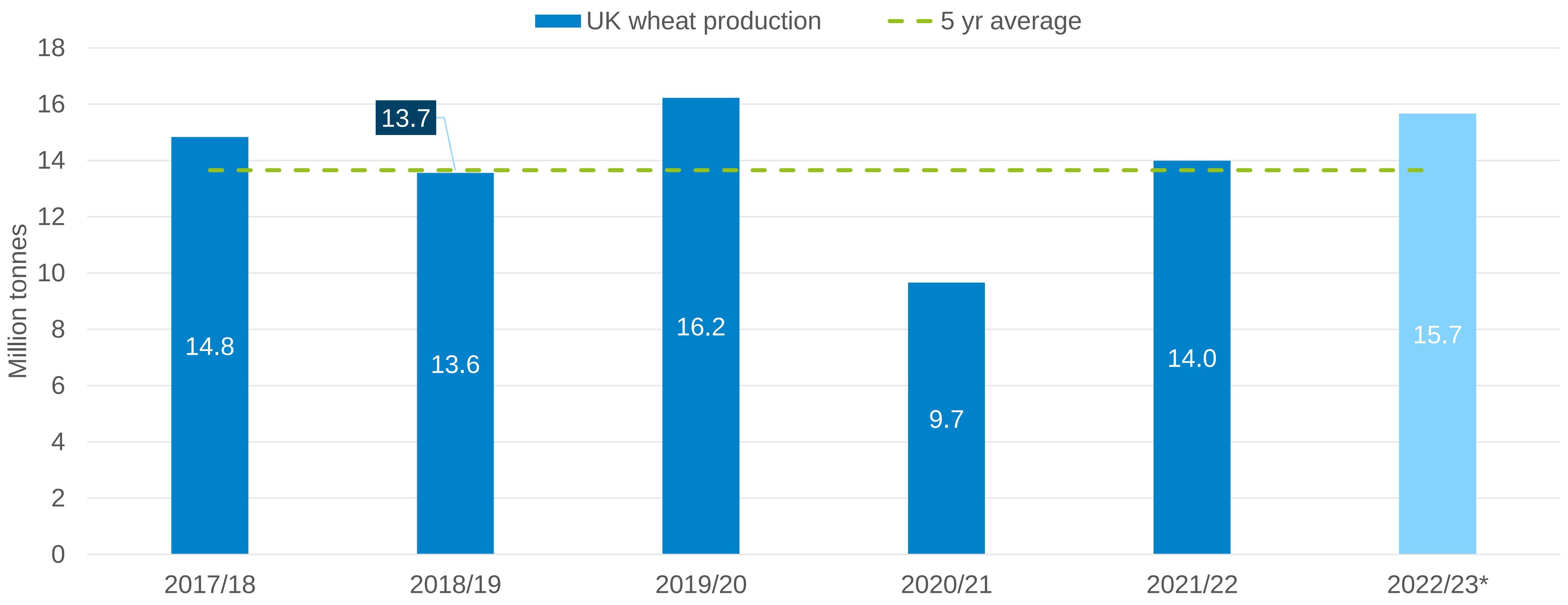
2022/23 – large carry-in stocks for wheat, but tight for barley





Source: AHDB, Defra

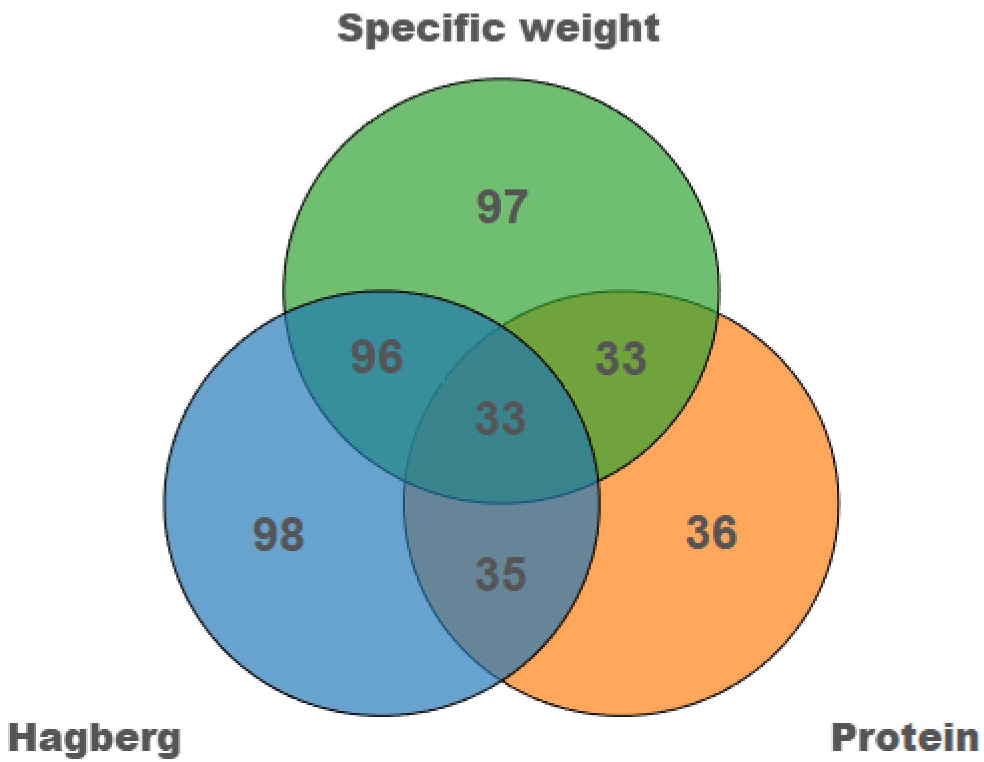
Bumper 2022 crop adding to heavier carry-in



Source: AHDB, Defra
*AHDB calculation

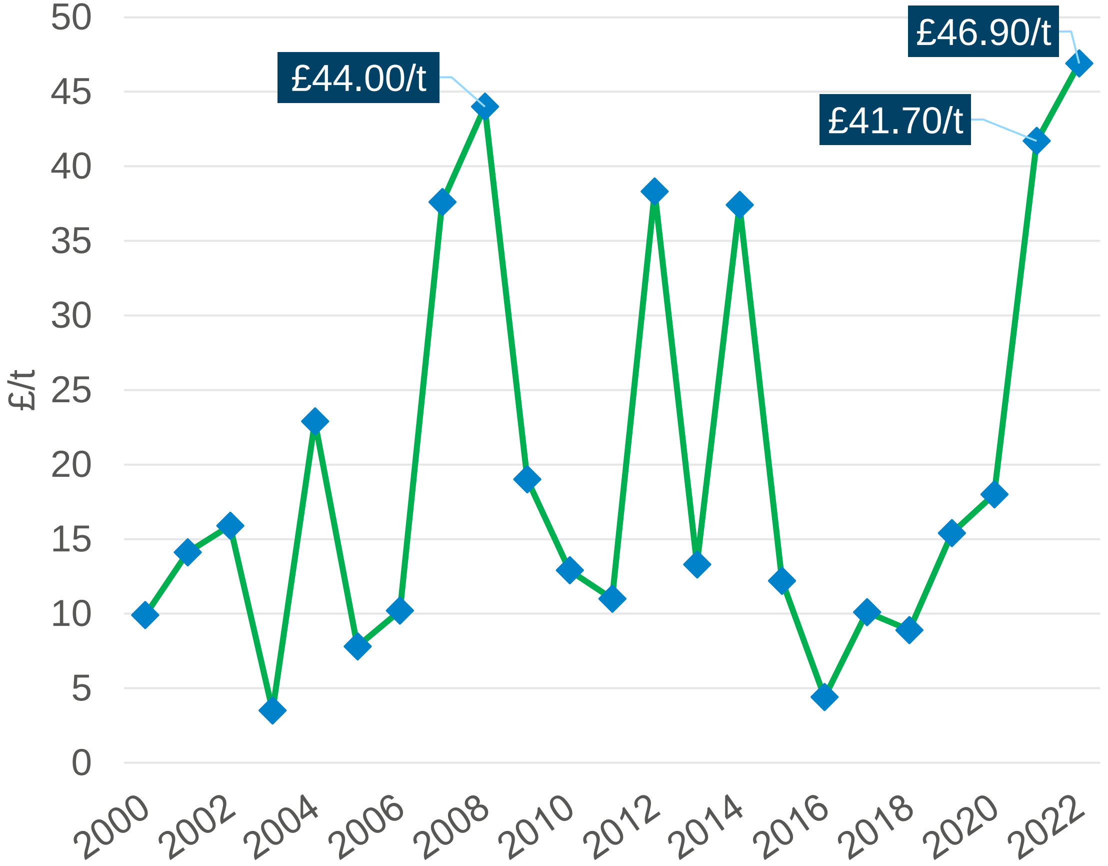
Quality 'amongst the best seen'….**minus** lower protein!

Final cereal quality results UK 2022
UK flour millers Group 1 samples
(Specific weight ≥ 76 kg/hl, Protein ≥ 13.0%, Hagberg Falling Number ≥ 250s)



Sample: 957

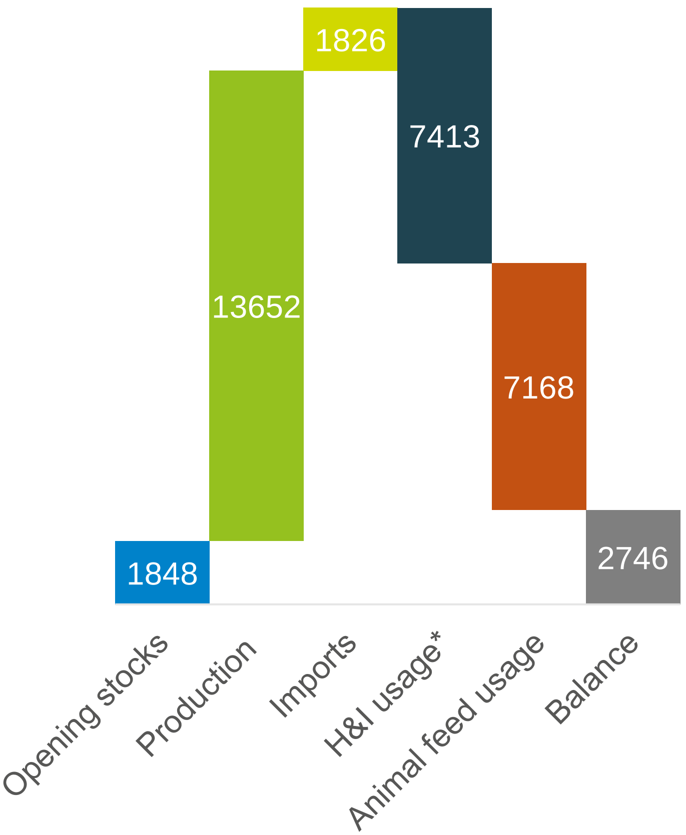
Premium of monthly average UK ex-farm milling wheat over feed wheat



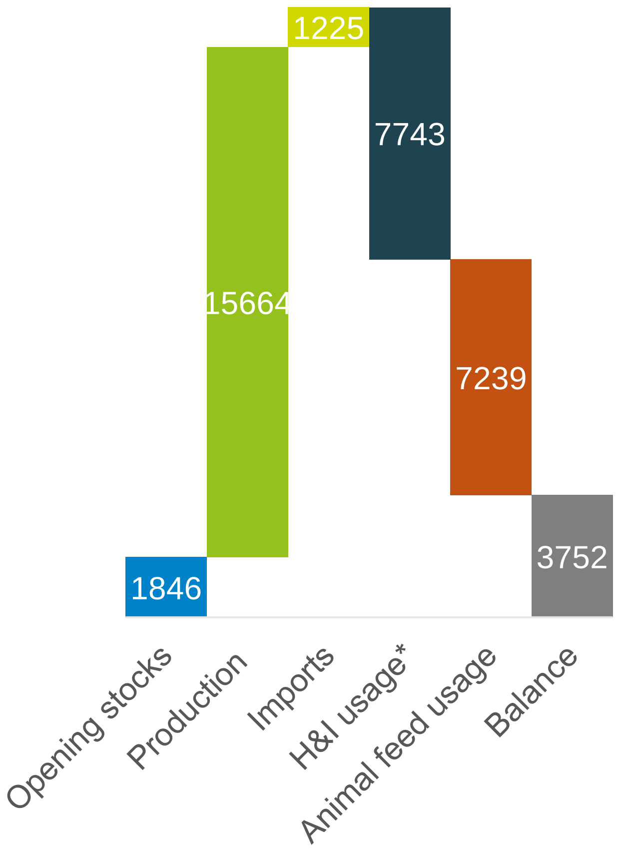
Source: AHDB Cereal Quality Survey, AHDB Corn Returns

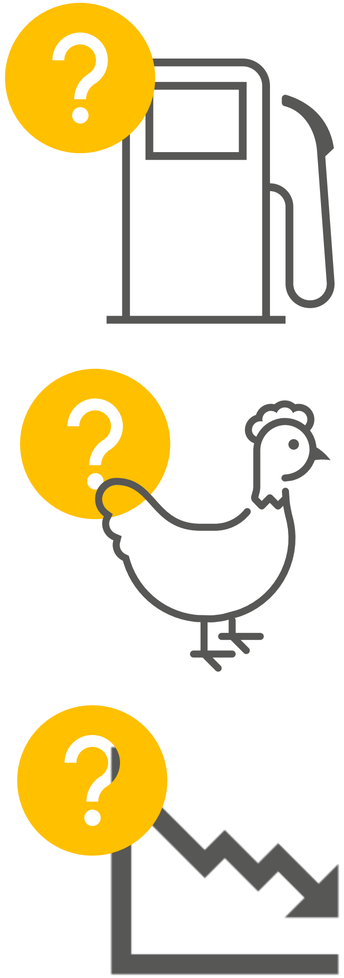
Heavy wheat balance this season with added uncertainty around demand

5 yr average



2022/23 (Nov estimates)

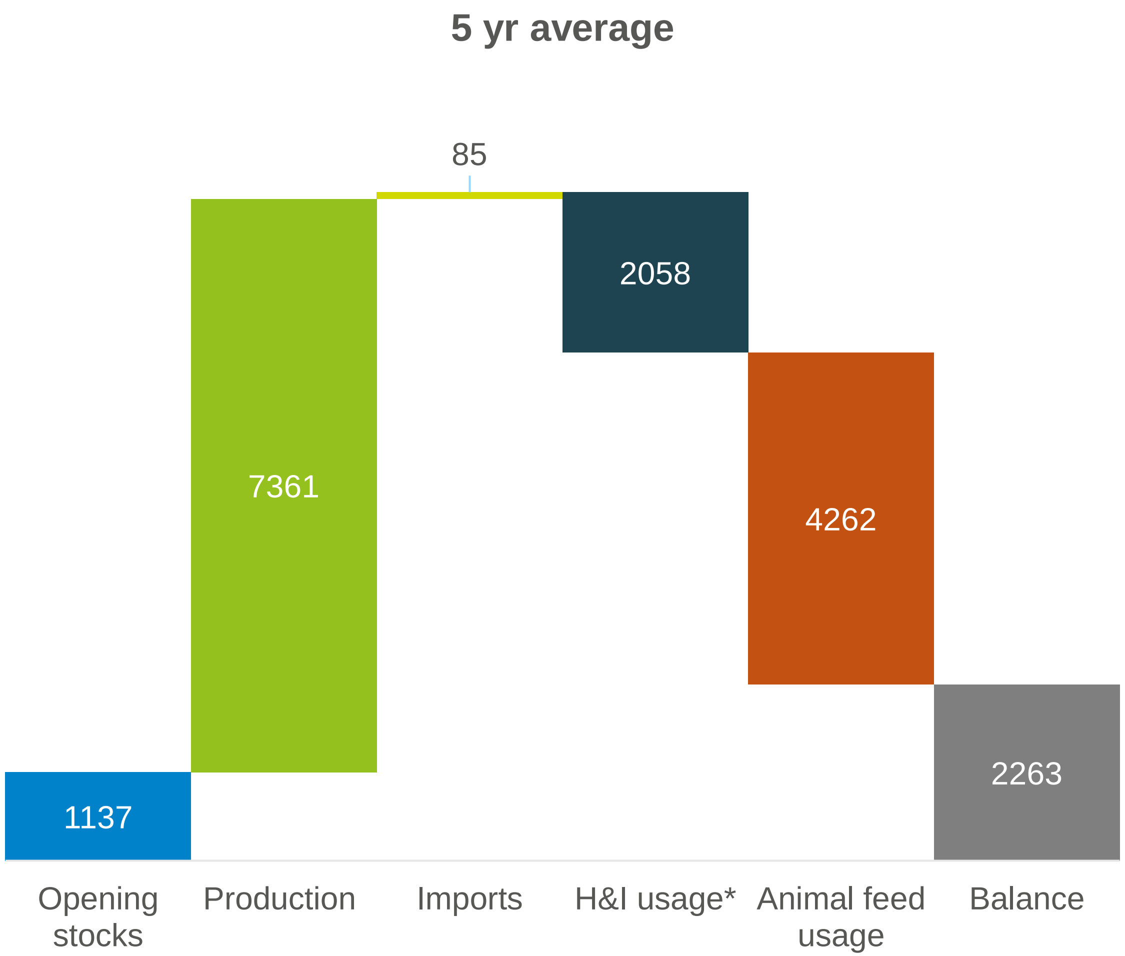


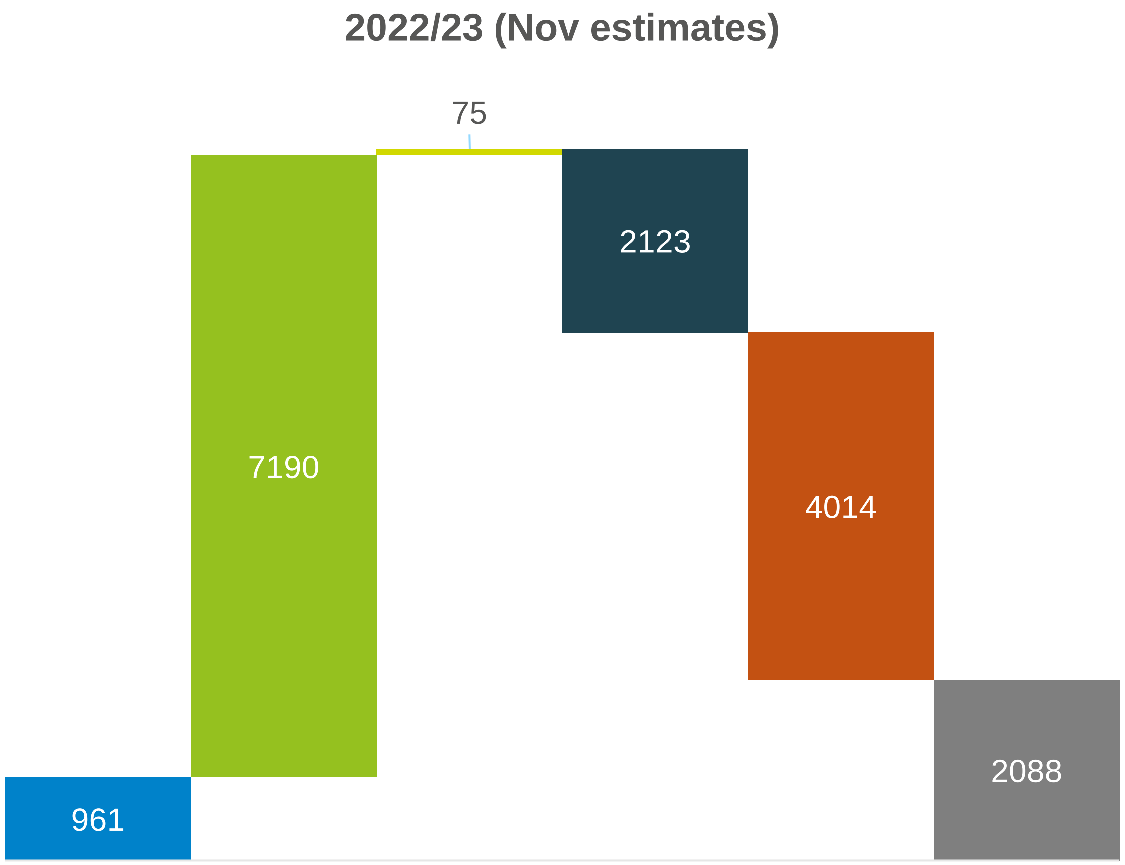


Unit: Thousand tonnes
Source: AHDB, Defra

*includes seed and other

Barley balance is more comfortable, but remains low historically

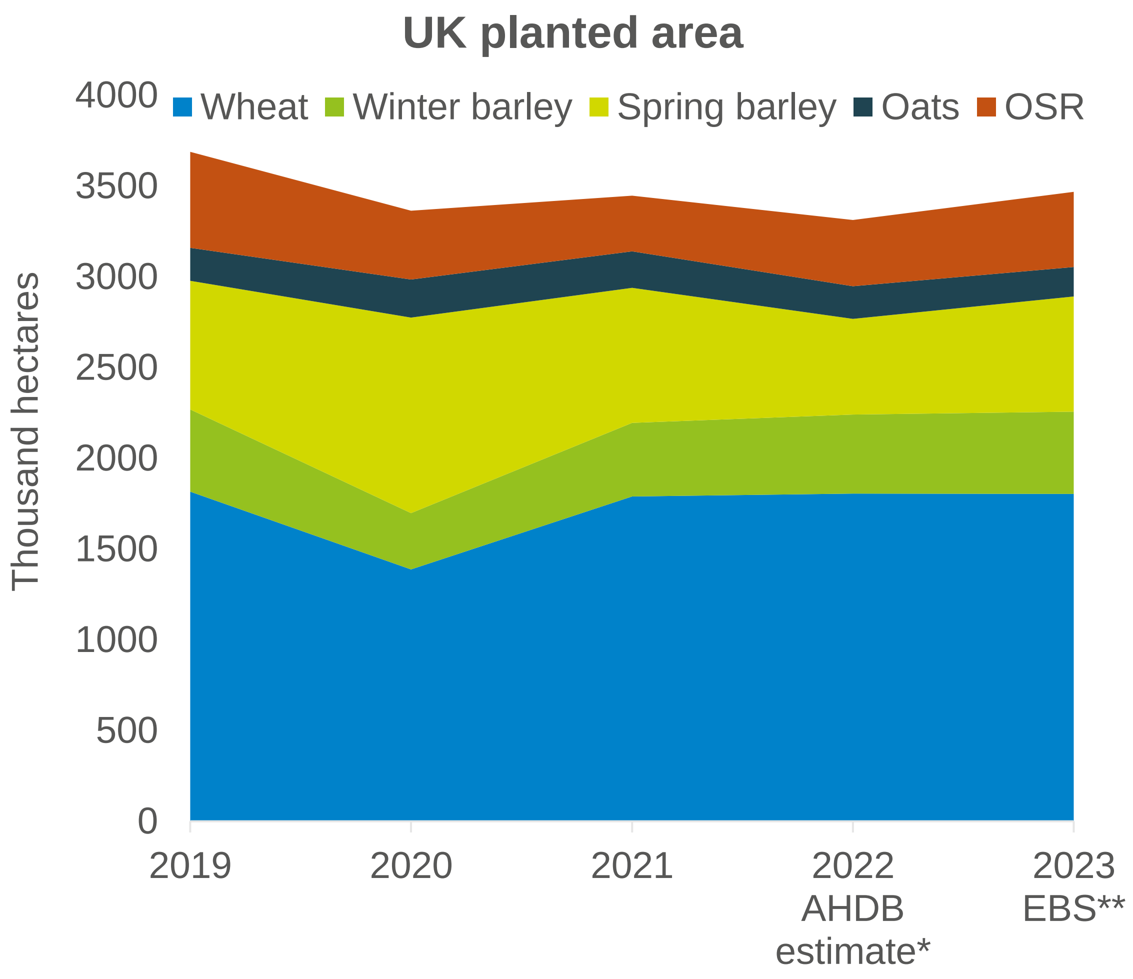




Unit: Thousand tonnes

Source: AHDB, Defra *includes seed and other

Winter plantings up for harvest 2023

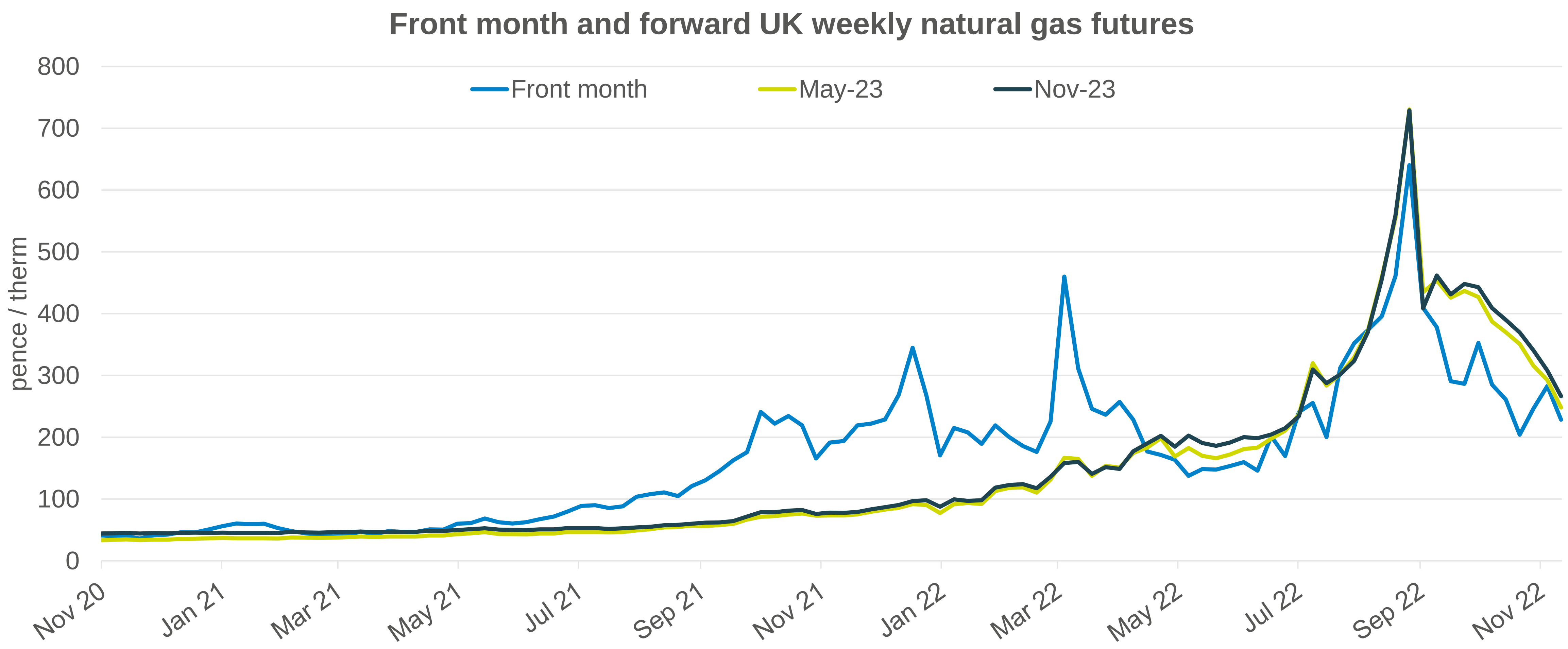


Thousand hectares	2022 area estimates*	Provisional EBS Forecast 2023	% Year-On-Year Change
Wheat	1,805	1,803	-0.1%
Winter barley	436	454	4.1%
Spring barley	672	635	-5.4%
Total barley	1,107	1,089	-1.7%
Oats	179	162	-9.5%
OSR	366	415	13.4%

Source: AHDB, Defra

*AHDB estimate, **provisional harvest 2023 Early Bird Survey planting intentions

Input costs to remain high?



Source: ICE, Refinitiv

To summarise…

- Heavy wheat balance sheet for 2022/23, but relatively tight barley supply and demand situation again

- Demand watch points that could weigh further on wheat

- Harvest 2023 – more area planted to winter crops due to favourable autumn weather

- High input costs likely to continue

Farmbench combinable crop results:
past, present and future

Mark Topliff, Lead Analyst

AHDB Farm Economics

CEREALS & OILSEEDS

Impact of higher costs

- COP has on average increased over the **five years to 2021**
  - **Middle 50%** of performers = **6% rise**
- Crop costs in **2022** are estimated to be **15% higher**
- **Up another 32%** for **2023** harvested crops
- Farmbench winter wheat net margins could **increase by 80% in 2022** but then **fall by two thirds in 2023** for middle 50% performers

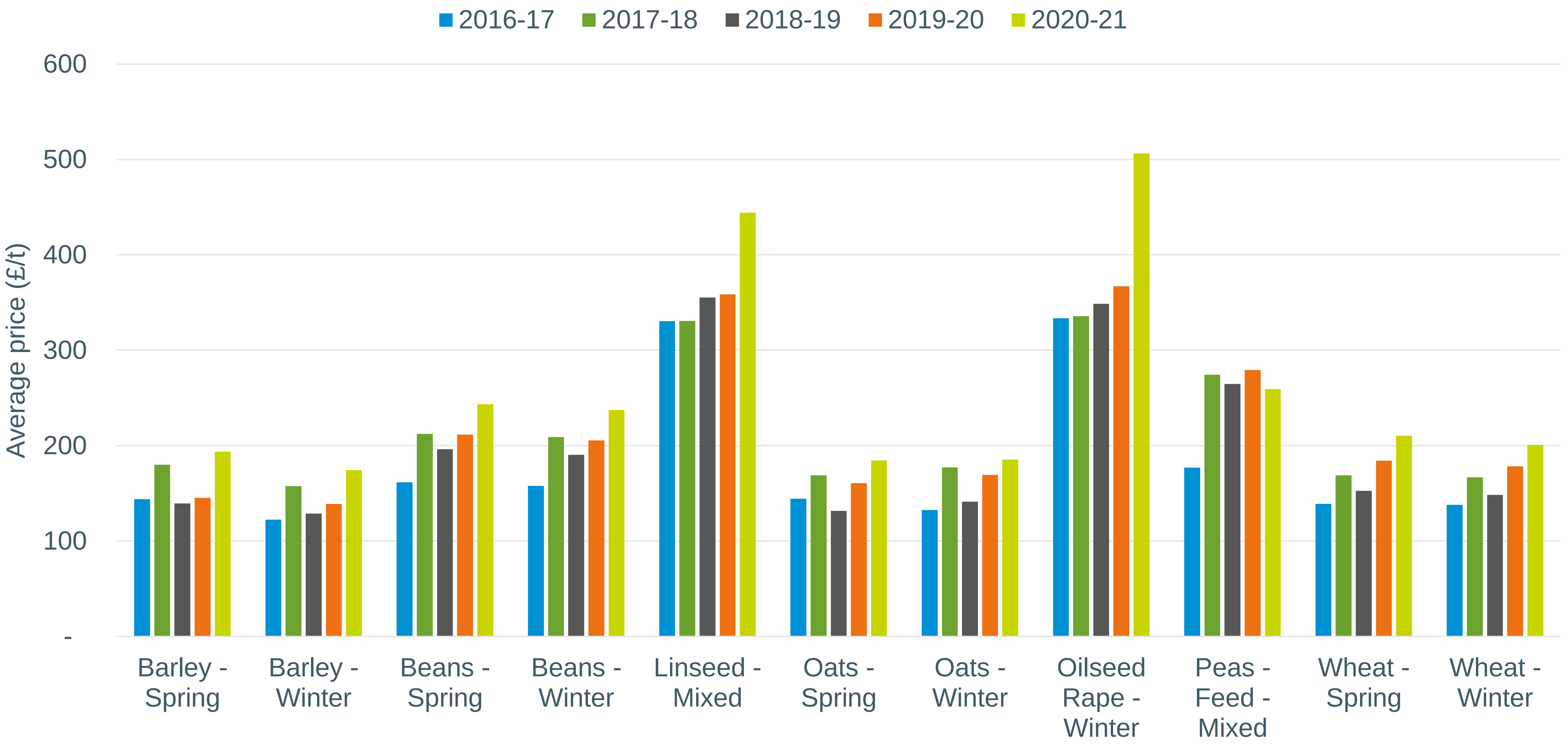
The analysis

- Over 11,000 conventional combinable crop enterprise performance results for 2017 to 2021 harvest years
- 2022 estimated figures based on part of crop year at higher input prices
- 2023 forecast figures based on a full crop year at current inputs inflation rates
- 10% fertiliser usage reduction is assumed

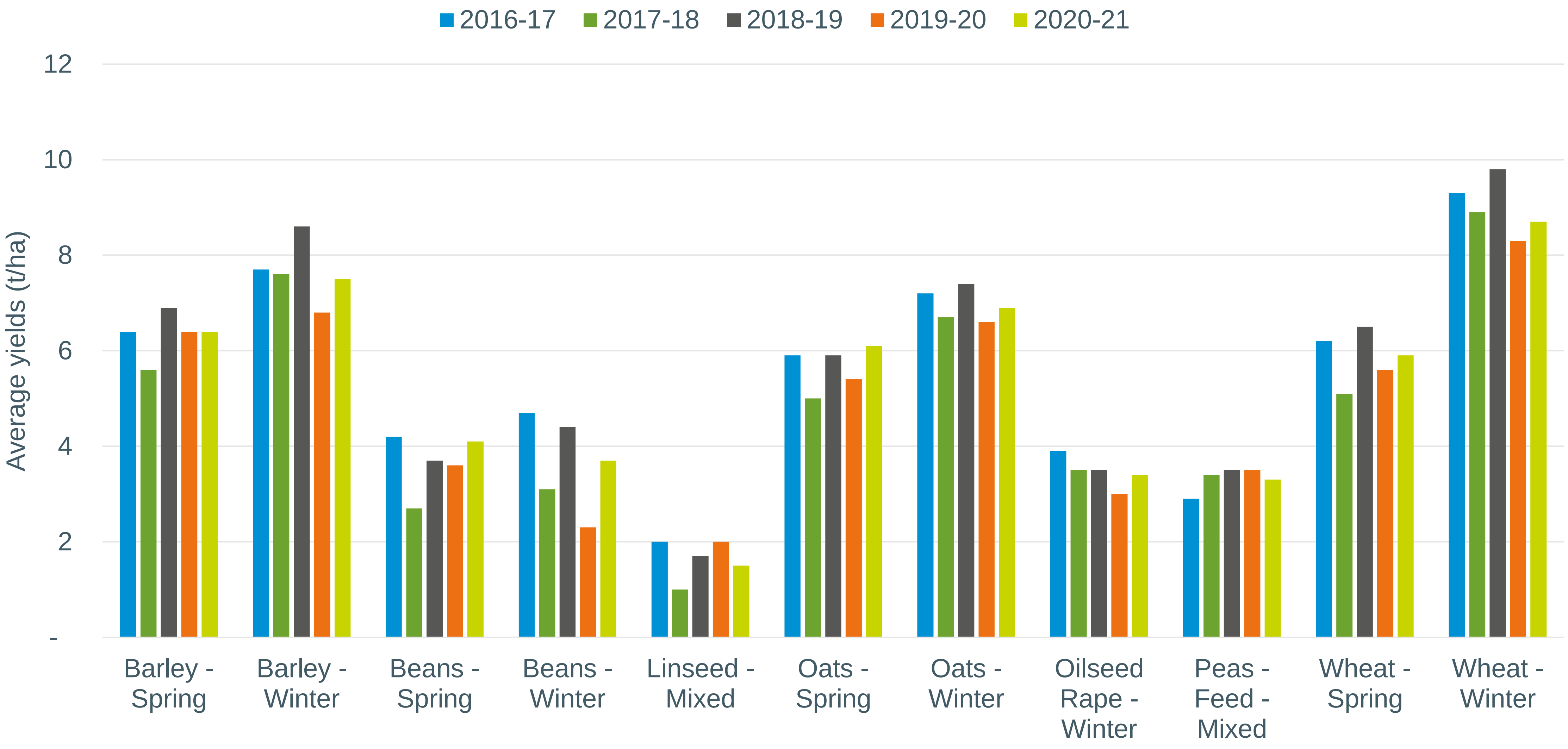
Crops analysed

- Spring barley
- Winter barley
- Spring beans
- Winter beans
- Linseed
- Spring oats
- Winter oats
- Winter oilseed rape
- Feed peas
- Spring wheat
- Winter wheat

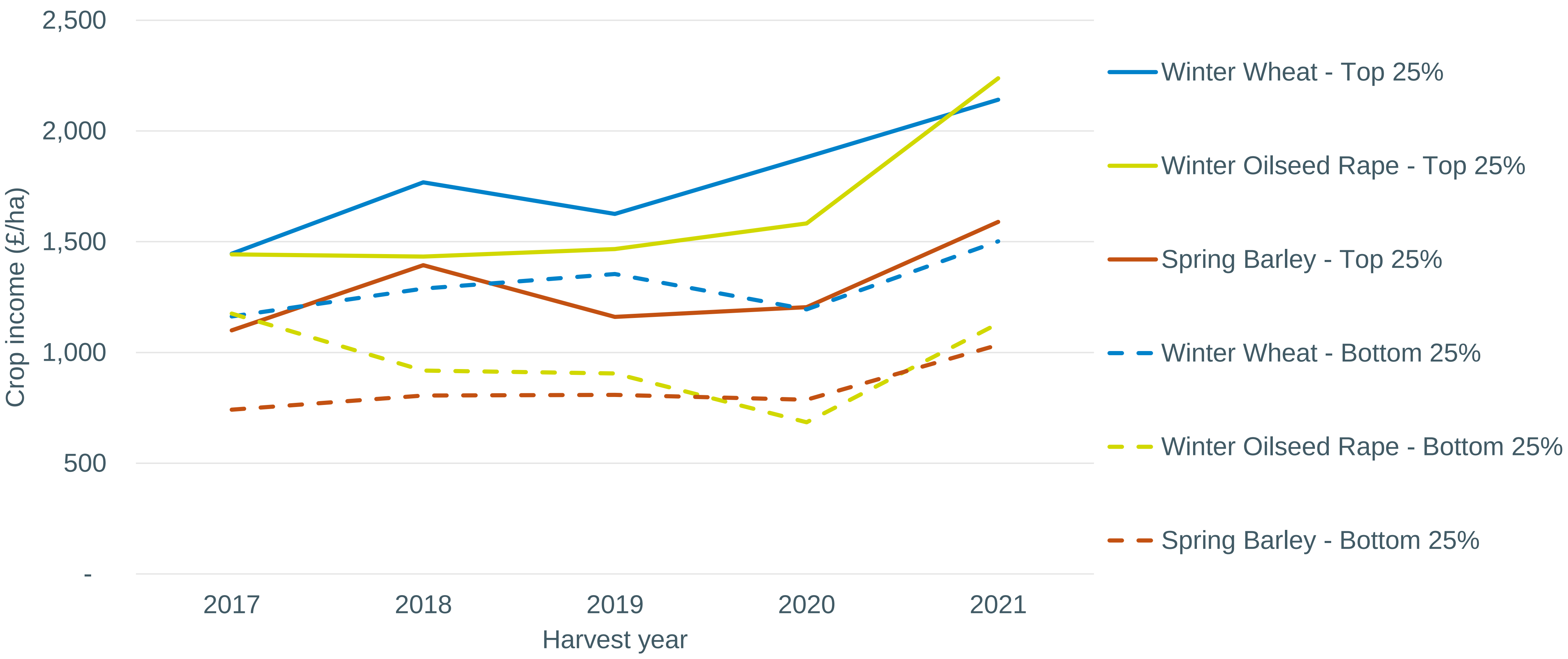
Upward prices trend for most crops since the 2019 harvest year



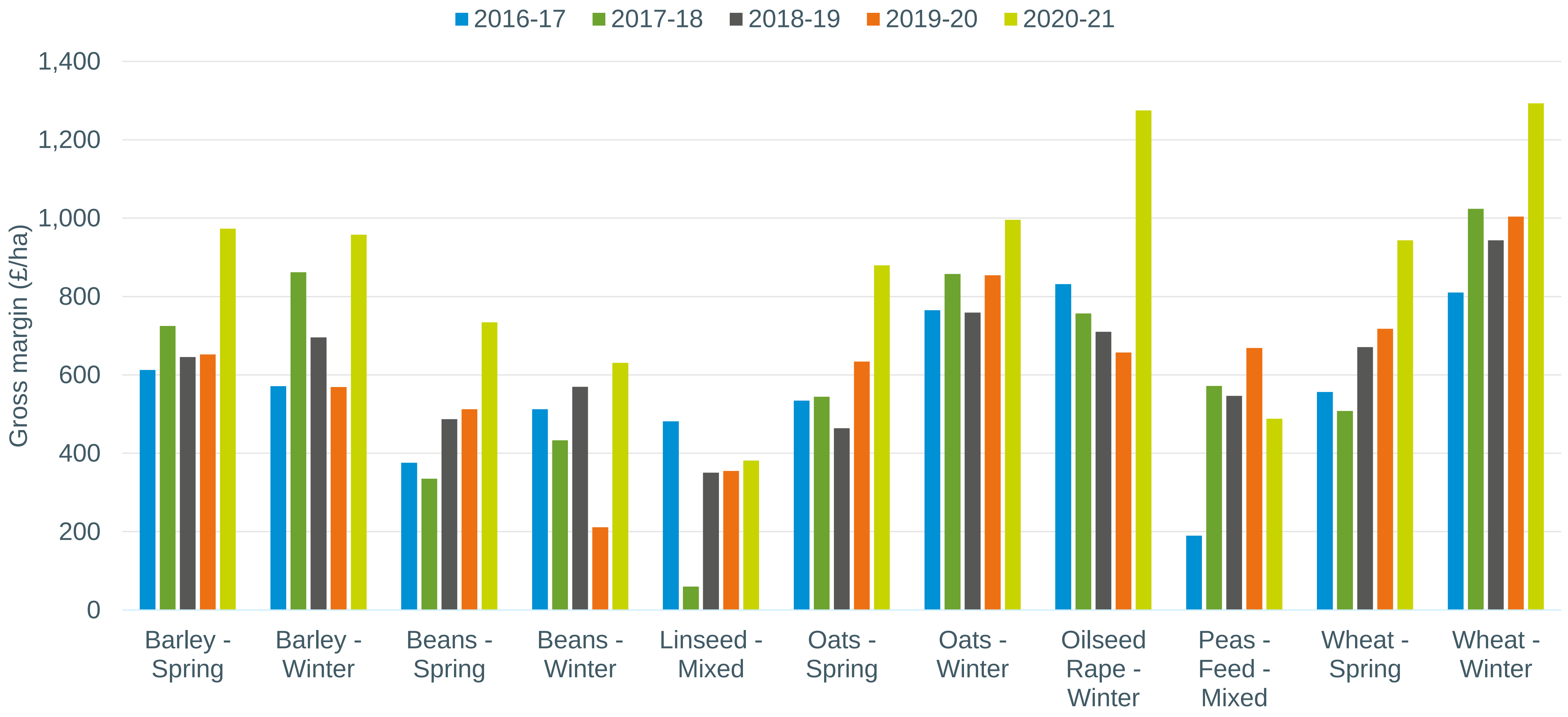
A roller coaster of a journey for crop yields



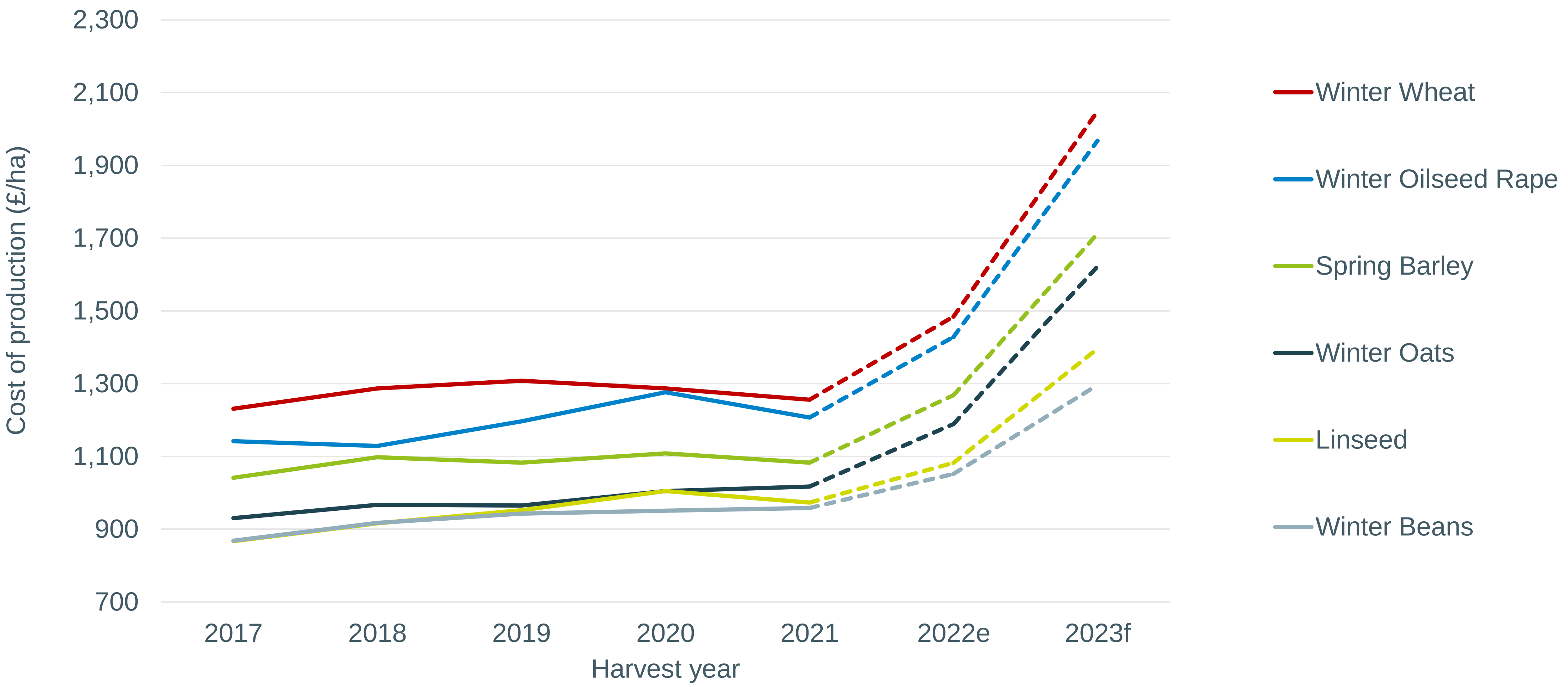
Top 25% income increased by around £500 to £800/ha over the five years



Middle 50% gross margins generally higher than in 2017

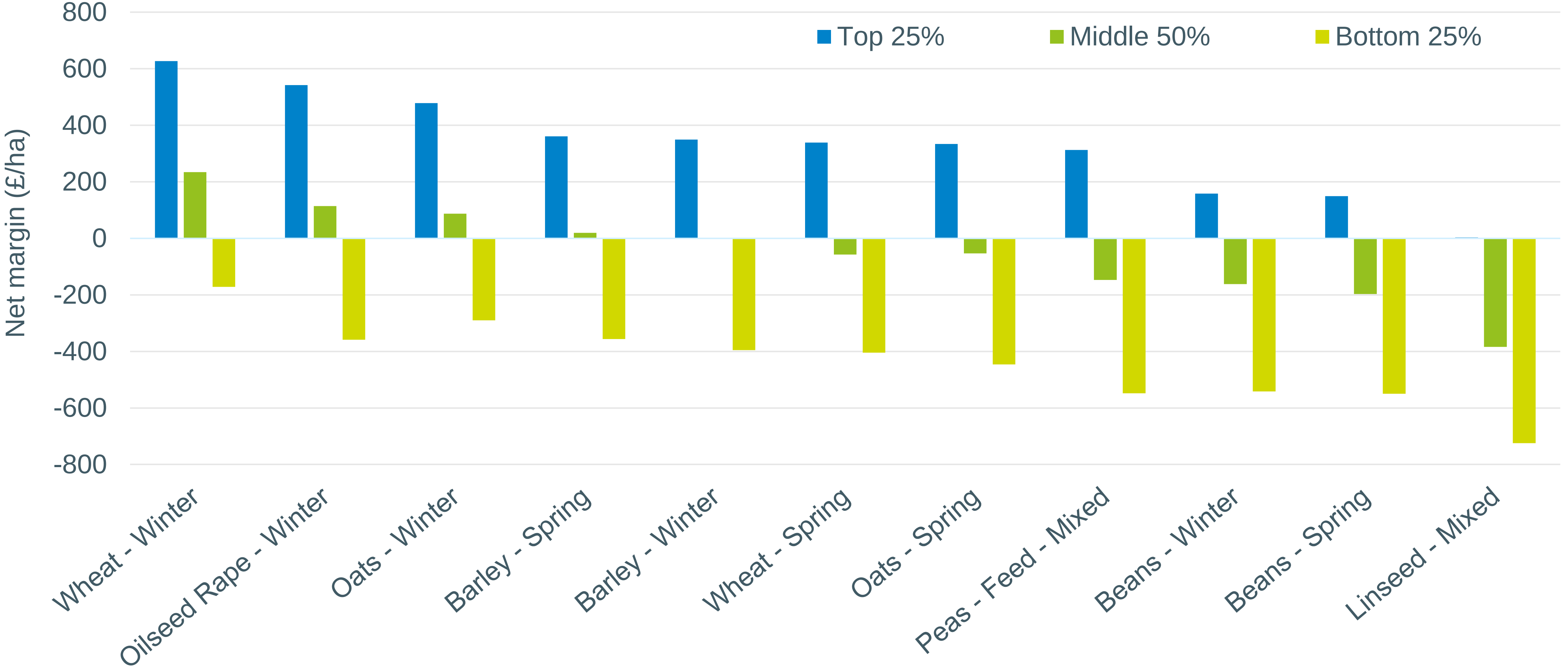


Average costs up 6% in five years, 15% in 2022 and 32% in 2023

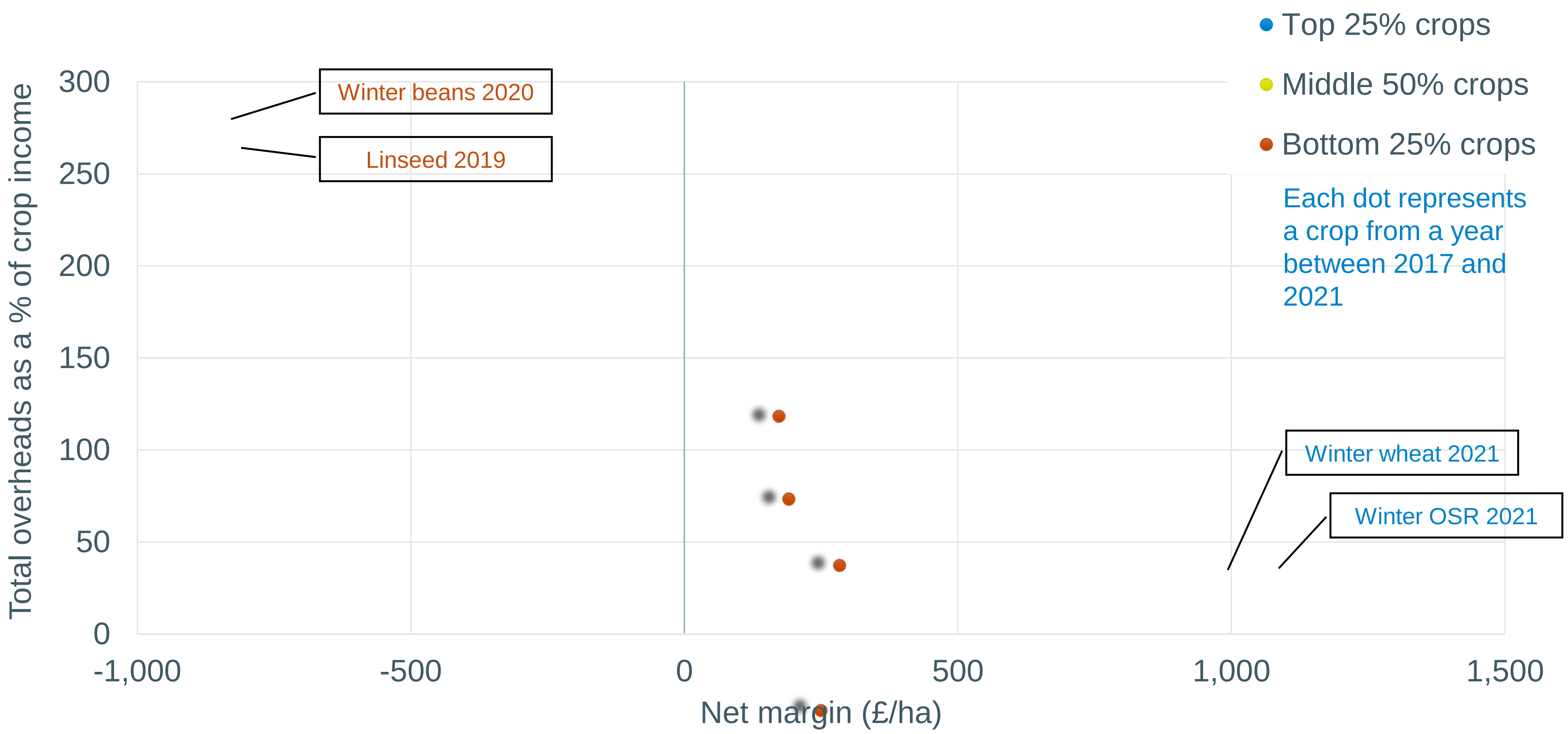


Middle 50% performers – ranked by net margin

Winter wheat, OSR and winter oats top 5-year average net margins



As overheads as a percentage of income reduce, net margin increases



Prices will have a greater impact than in previous years

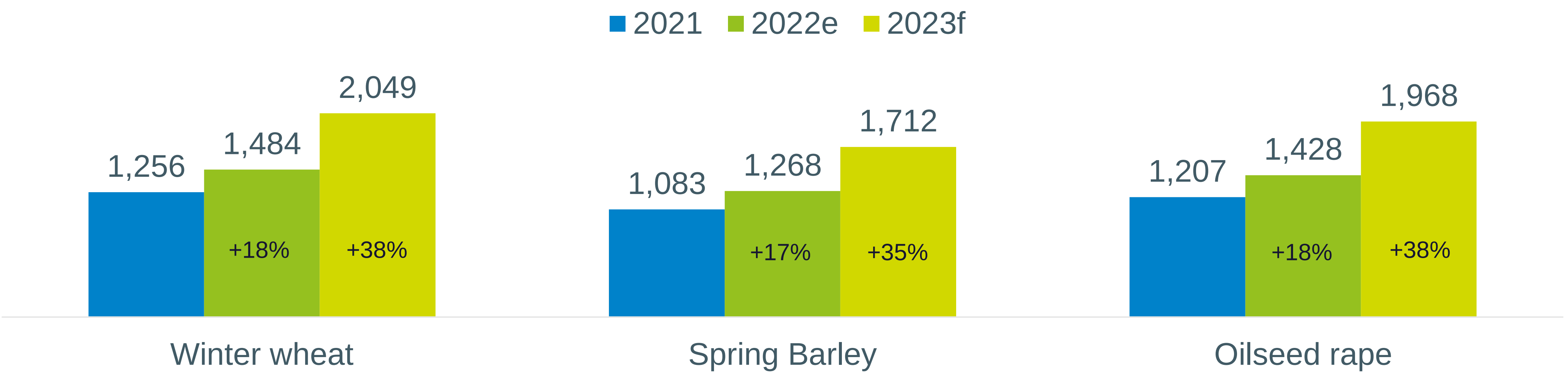
£/t	Middle 50% 2021 (Farmbench reported prices)	Forward crop prices[1] 2022 (based on Nov-22)	2023 (based on Nov-23)
Feed wheat	196	265	261
Feed barley	190	240	236
Oilseed rape	499	559	560

[1]as at 4/11/22

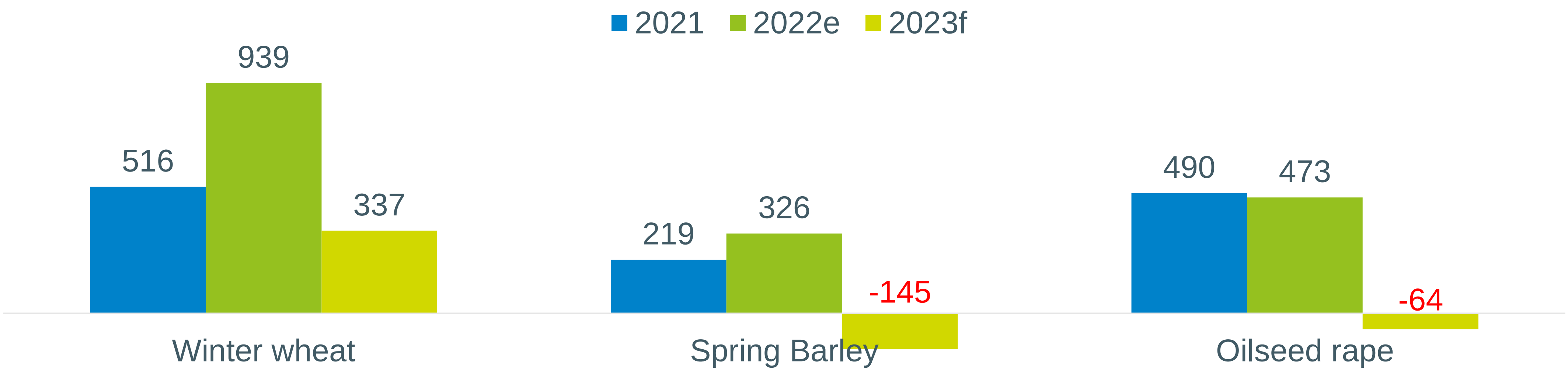
t/ha	Yields for the middle 50% 2021	5-year average[2]
Winter wheat	8.8	8.9
Spring Barley	6.5	6.3
Oilseed rape	3.4	3.4

[2]Farmbench 5-year average

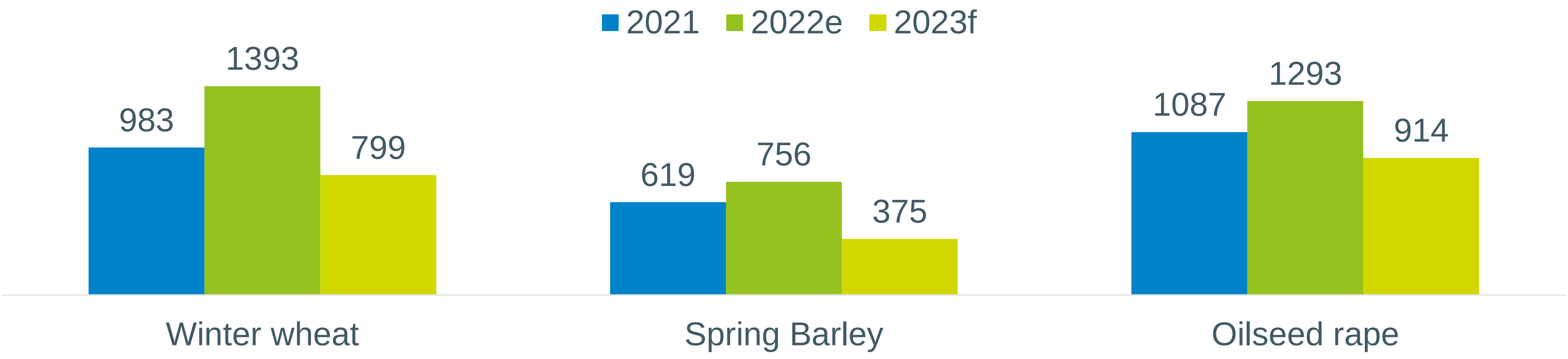
Total cost of production (£/ha) – middle 50%



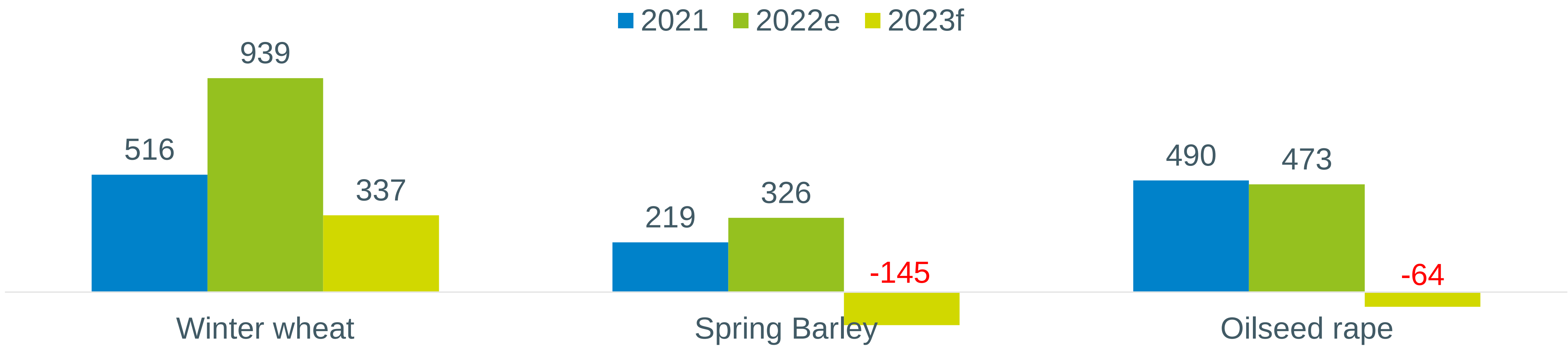
Net margin (£/ha) – middle 50%



Net margin (£/ha) – top 25%



Net margin (£/ha) – middle 50%



Key results

2017 to 2021

- Prices had kept pace with gradual cost increases
- Winter wheat still the best cash crop

2022

- The influence of higher prices could rise COP by 15% but margins could rise by up to 80%

2023

- Full impact of cost rises
- Average COP up 32%
- Net margins down by up to 65% in wheat but still positive

The full article can be found at ahdb.org.uk/news/farmbench-results-past-present-and-future

Support can be found at ahdb.org.uk/tools

Also:
ahdb.org.uk/integrated-pest-management-ipm-hub

FARMBENCH

Farmbench helps you to understand and compare your full costs of production at both enterprise and whole-farm level.

MACHINERYCOSTING CALCULATOR

Calculate the cost of farm machinery, per hectare or per hour, with this simple calculator.

FARMBUSINESS REVIEW

The Farm Business Review Tool can help you assess your business and get ready for a world without BPS payments.

Nitrogen fertiliser adjustment calculator

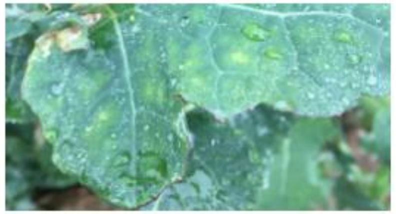
Use this tool to establish the economic optimum amount of nitrogen to apply to cereal and/or oilseed crops.

Mycotoxin rainfall risk tool

Calculate rainfall-related mycotoxin risk assessment scores automatically with this tool

BYDV management tool

Time your cereals insecticide sprays for aphid/BYDV control with greater accuracy.



Light leaf spot forecast

Temperature and rainfall information is used to simulate disease development.

Phoma leaf spot forecast

Temperature and rainfall information is used to simulate disease development.

Sclerotinia infection risk tool

See the extent of risk of Sclerotinia infection of oilseed rape crops in your area.

Independent analysis and insight you can trust

The small print

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Where to find AHDB market information

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BEEF & LAMB

For the latest market news and up-to-date price reports, head to the Beef and Lamb market pages. Or subscribe to Cattle and Sheep Weekly for the best info straight to your inbox.

CEREALS & OILSEEDS

The website has a wealth of resources available from our markets homepage including a daily update on grain markets. The supply and demand section is a key resource for the market whilst the latest surveys detail planting and variety trends.

DAIRY

The Dairy markets homepage will signpost you to the industry data, analysis and insights from the dairy sector to help inform your business decisions. Our industry experts will guide you through the market movements and provide a clear, impartial view on what it all means.

PORK

The latest pig prices, and industry essential trade data, are the cornerstones of the Pork market website pages. There is also the latest analysis and insight to provide you with a clear and impartial view.

Our trade and policy resources focus on the future changes in domestic policy and trading relationships to help farmers and growers explore how these will affect their business. There is also a dedicated Consumer and Retail Insight team who look at the needs of the modern consumer as well as their attitudes towards cooking, buying and eating food.

Thank you

AHDB

CEREALS & OILSEEDS

Session 2.

New markets, new demand panel discussion.

11:00 – 12:00

AHDB

CEREALS & OILSEEDS

Introduction to Vivergo Fuels

AHDB Grain Market Outlook Conference 2022

November 2022

Vivergo at a glance

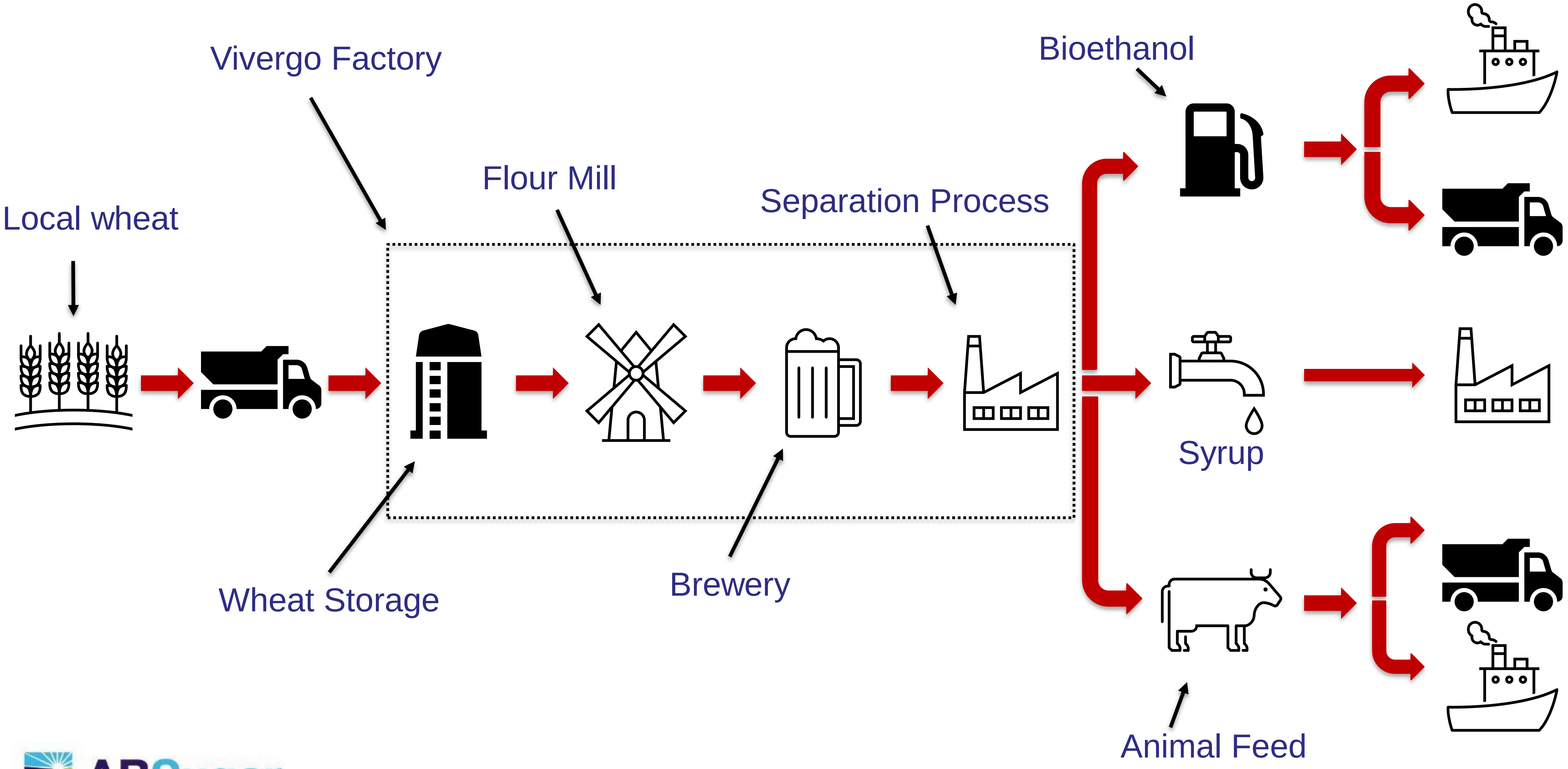
- Operational capacity of up to:
  - 420 million litres ethanol
  - 400,000 tonnes protein rich animal feed
  - from over one million tonnes of wheat

- Largest producer in UK
- Top three producer in EU

ABSugar

vivergofuels

Our Production Process:



Bio-Ethanol: Drop in solution to decarbonise transport

- Our bio-ethanol:
  - Tailored to road fuel specification
  - Appropriate for industrial application

- E10 introduced September 2021

- In road use:
  - Reduction in GHG of over 65% compared to gasoline
  - Vivergo production is the equivalent to 260k cars of the road

  - Contributes to diversification of the energy mix

- Distribution to UK and EU markets

ABSugar

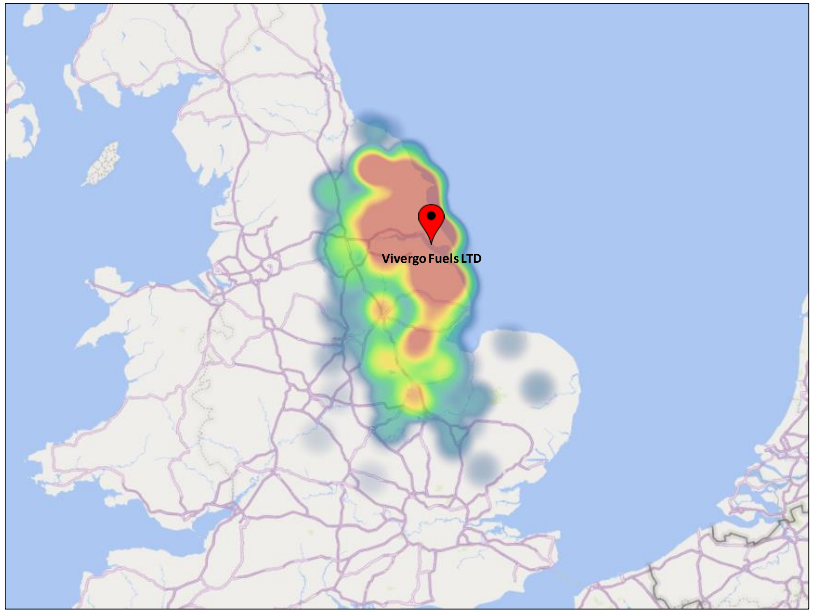
vivergofuels

Wheat: Major demand centre for local production

- Our dream supply:
  - Local good quality - high starch wheat
  - Low carbon intensity supply chain
    - High yield
    - Efficient production methods
  - Certified to meet ethanol standards
    - Red Tractor
    - Grain passport and origin declarations

- Source locally wherever possible; 100% in 2022

- UK yields and process efficiencies combine to make UK ethanol an exceptionally efficient land user



ABSugar

vivergofuels

Animal Feed: Dried Distillers Grains Solubles

- Largest single site producer of animal feed in UK
- Consistent quality:
  - Pelleted
  - Low oil
  - Wheat derived
- Contributes to reducing UK protein deficit

ABSugar

vivergofuels

Thank you…

Session 3.

Challenges ahead - managing risk, with a focus on climate change and carbon markets.

13:00 – 14:15

CEREALS & OILSEEDS

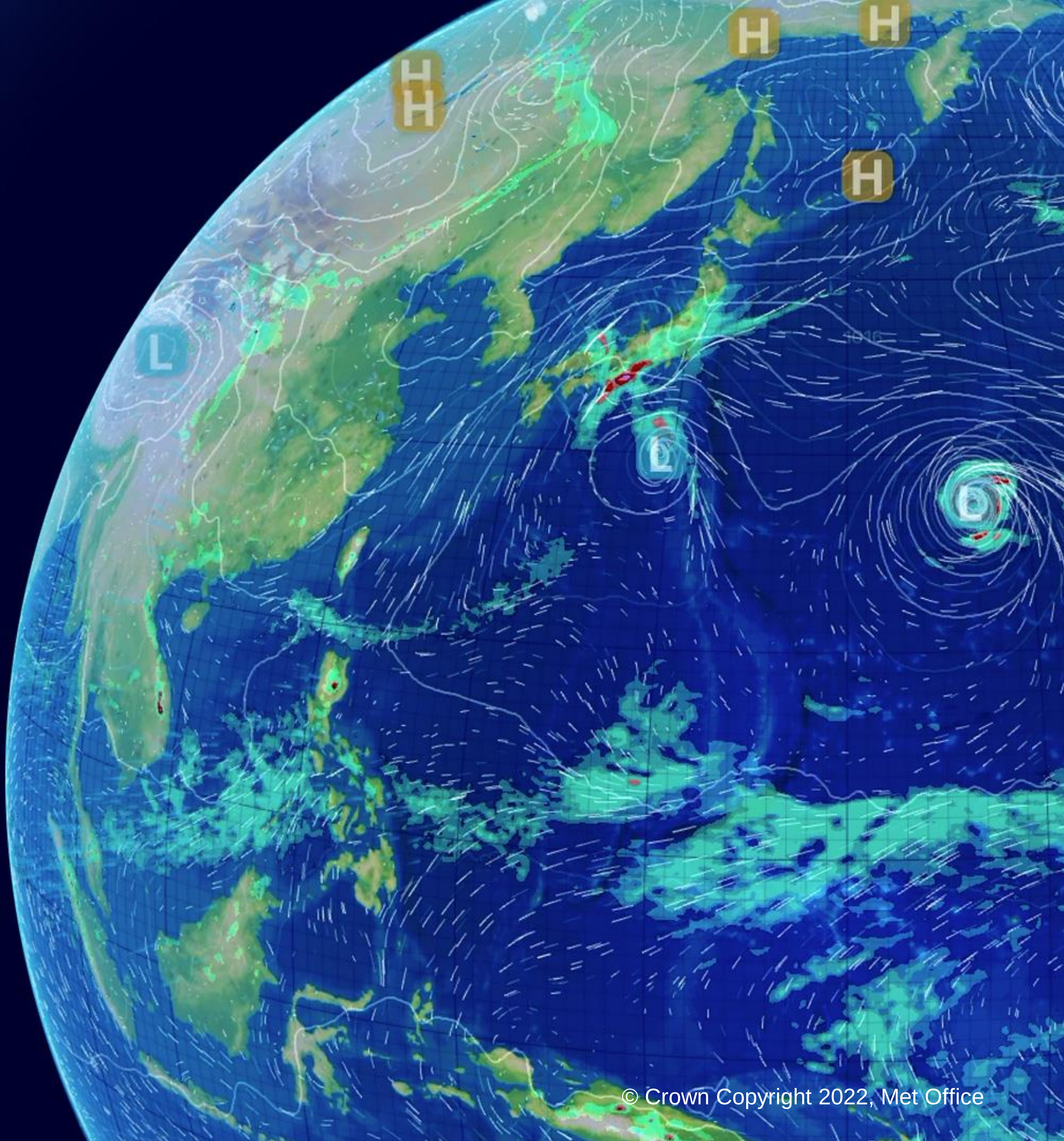
Met Office

How will climate change affect UK agriculture and food security?

Dr Pete Falloon FRMetS FRSA

Lead – Met Office Food, Farming and Natural Environment Climate Service for Defra

With thanks to Jemma Davie, Andrew Cottrell, Tom Crocker, Debbie Hemming, Ed Pope, Katie Hodge, Julia Lockwood, Jeff Knight, Chris Kent, Neil Kaye

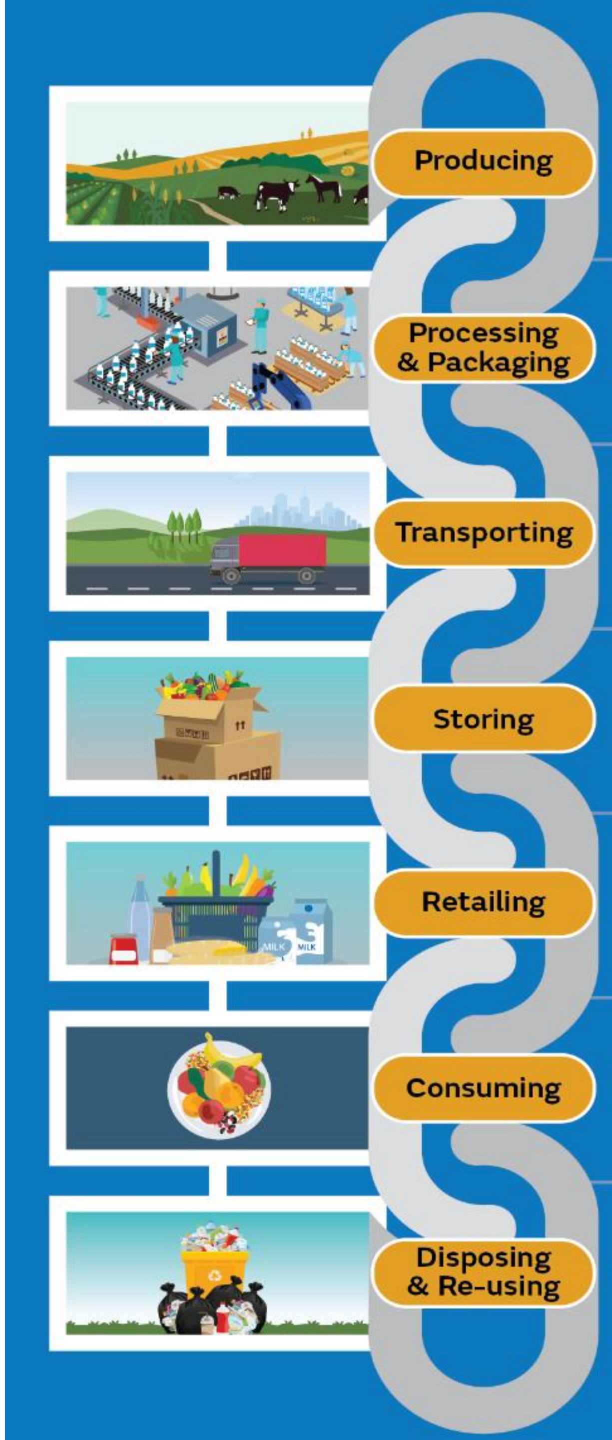


Outline

- Climate change – UK and overseas

- How will climate change affect UK agri-food systems?
    - Impacts and adaptation
    - Net zero

- Concluding thoughts



UKCP18: Climate change over land

How will the seasons change?

Summers

HOTTER

DRIER

Winters

MILDER

WETTER

How will extremes change?

Maximum temperature of a summer's day could increase by as much as 10°C in some places

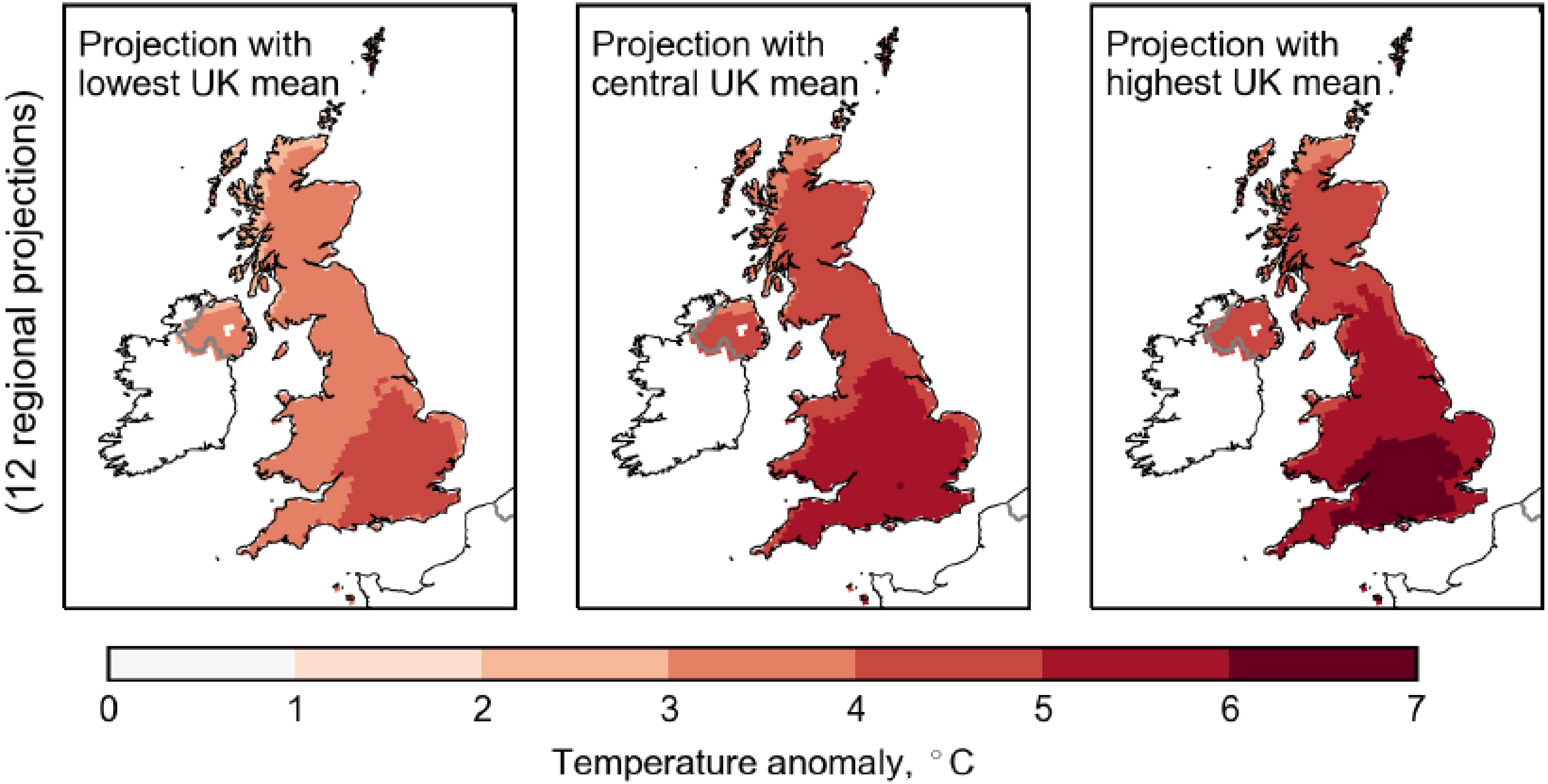
Rainfall is expected to be more intense,

UK climate change: temperature

Change in annual mean temperature

2070s vs. present day

High emissions scenario (RCP8.5)



Met Office

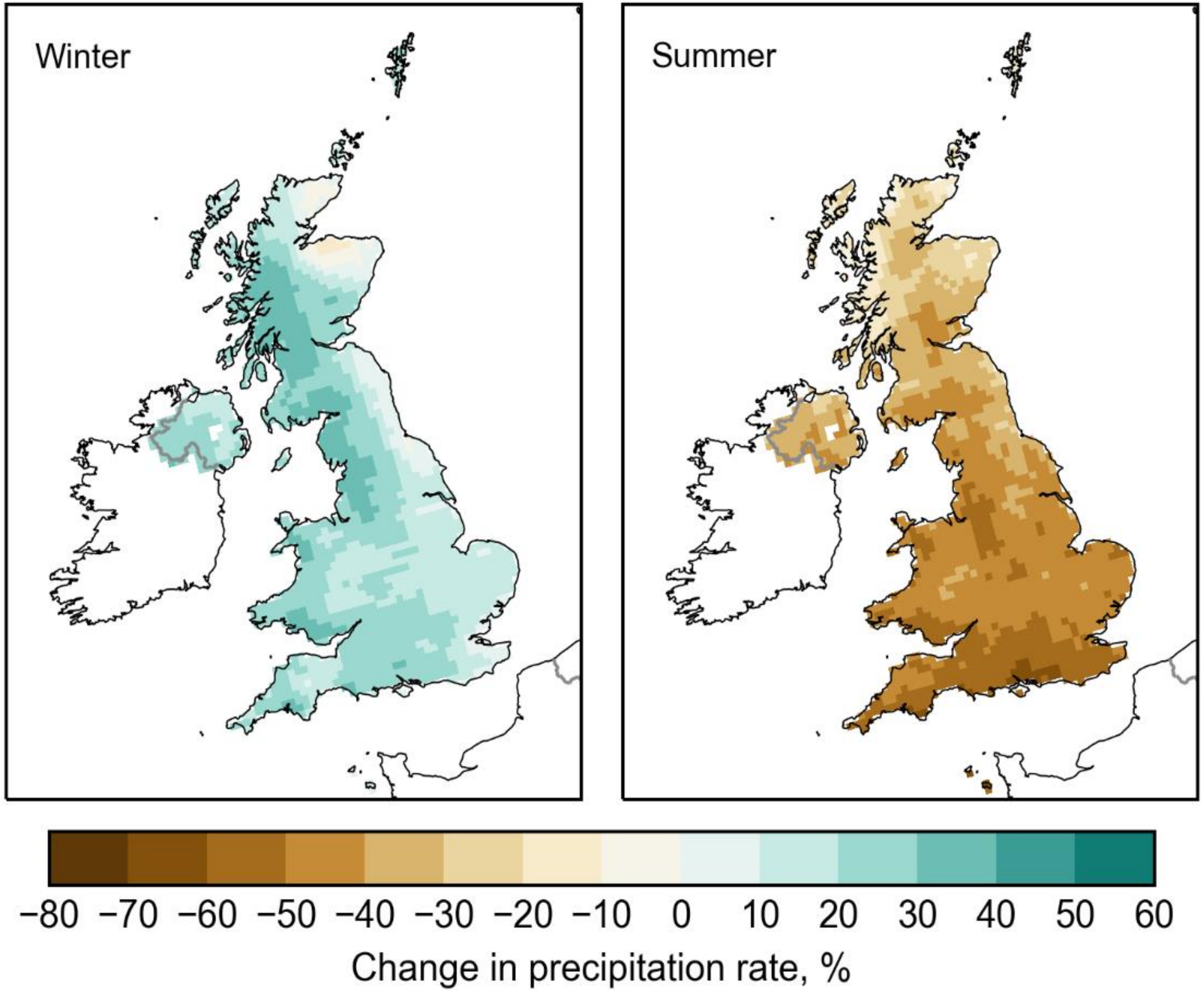
UK climate change:

precipitation

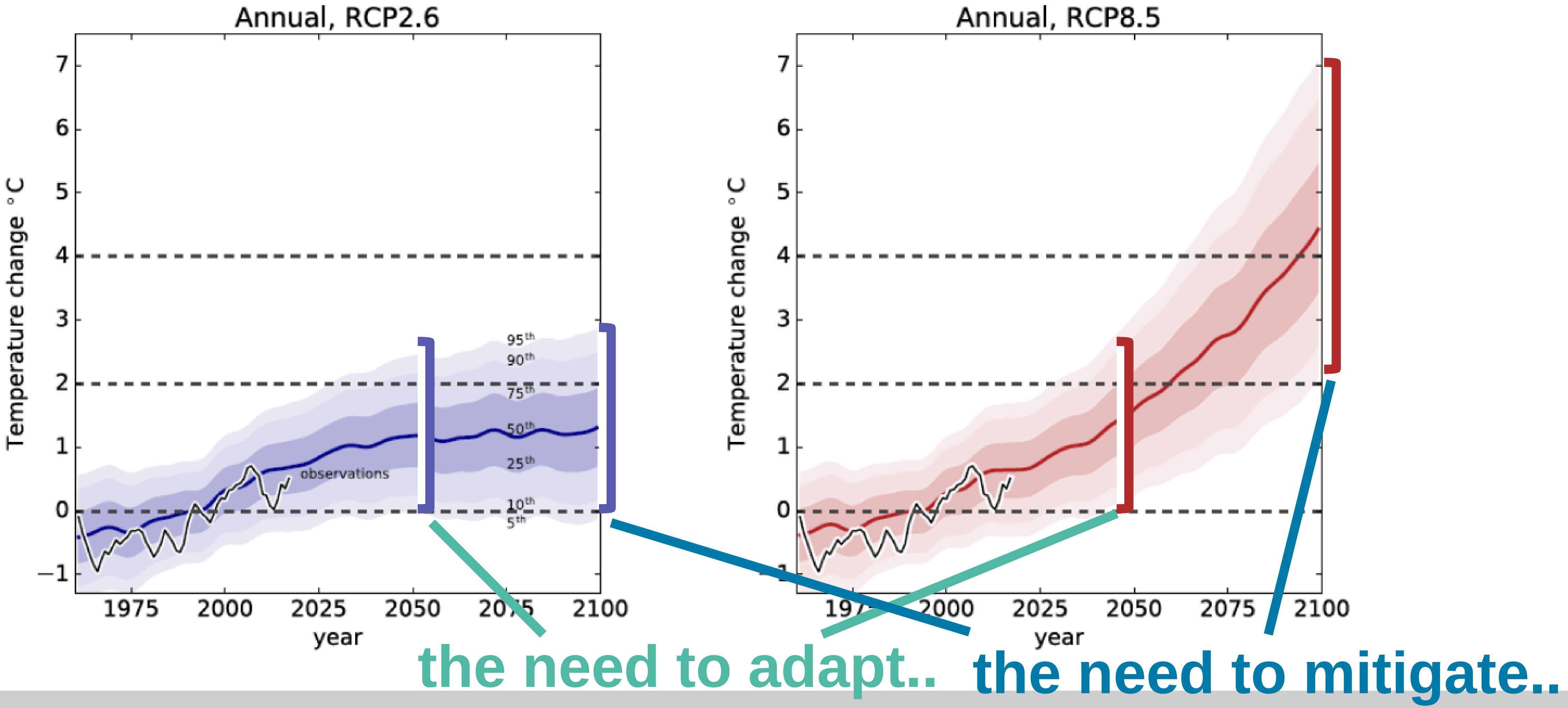
% Change in seasonal mean precipitation

2070s vs present day

High emissions scenario (RCP8.5)



Climate change: emissions scenarios, adaptation and mitigation

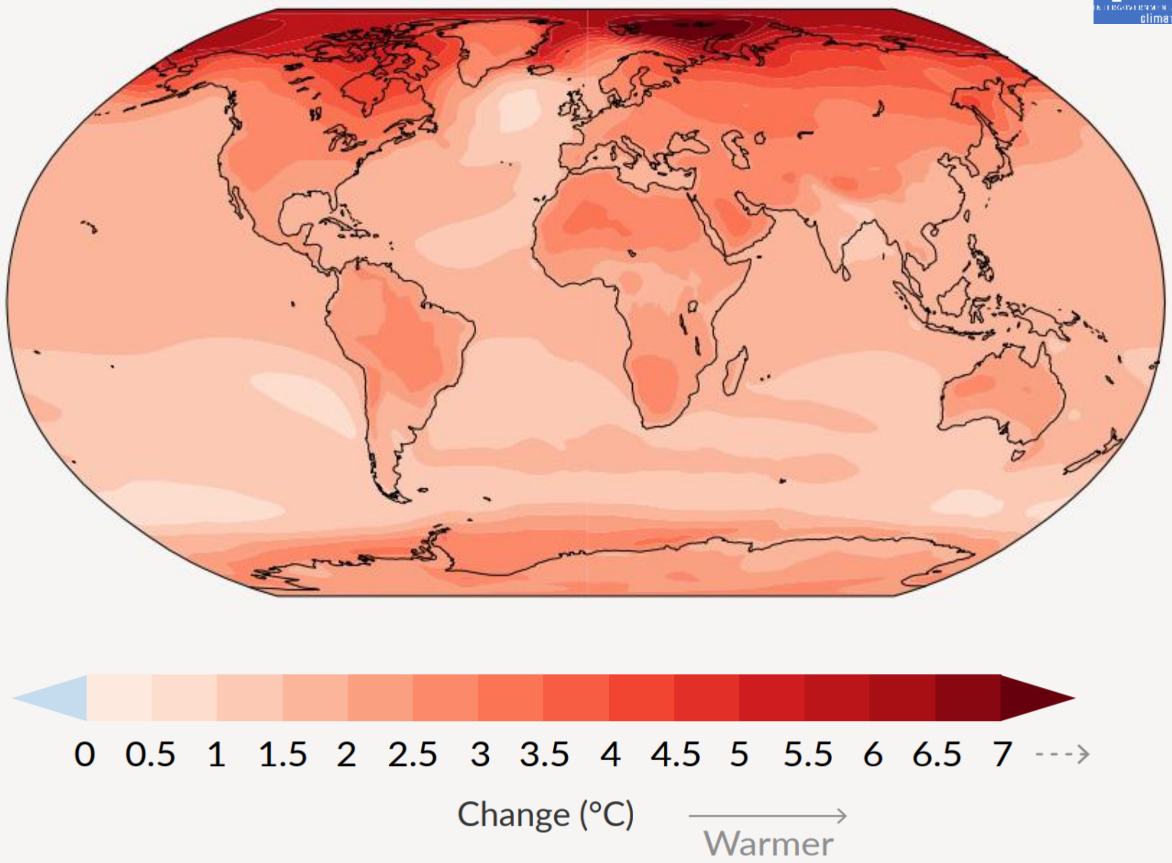


What will climate change mean overseas?

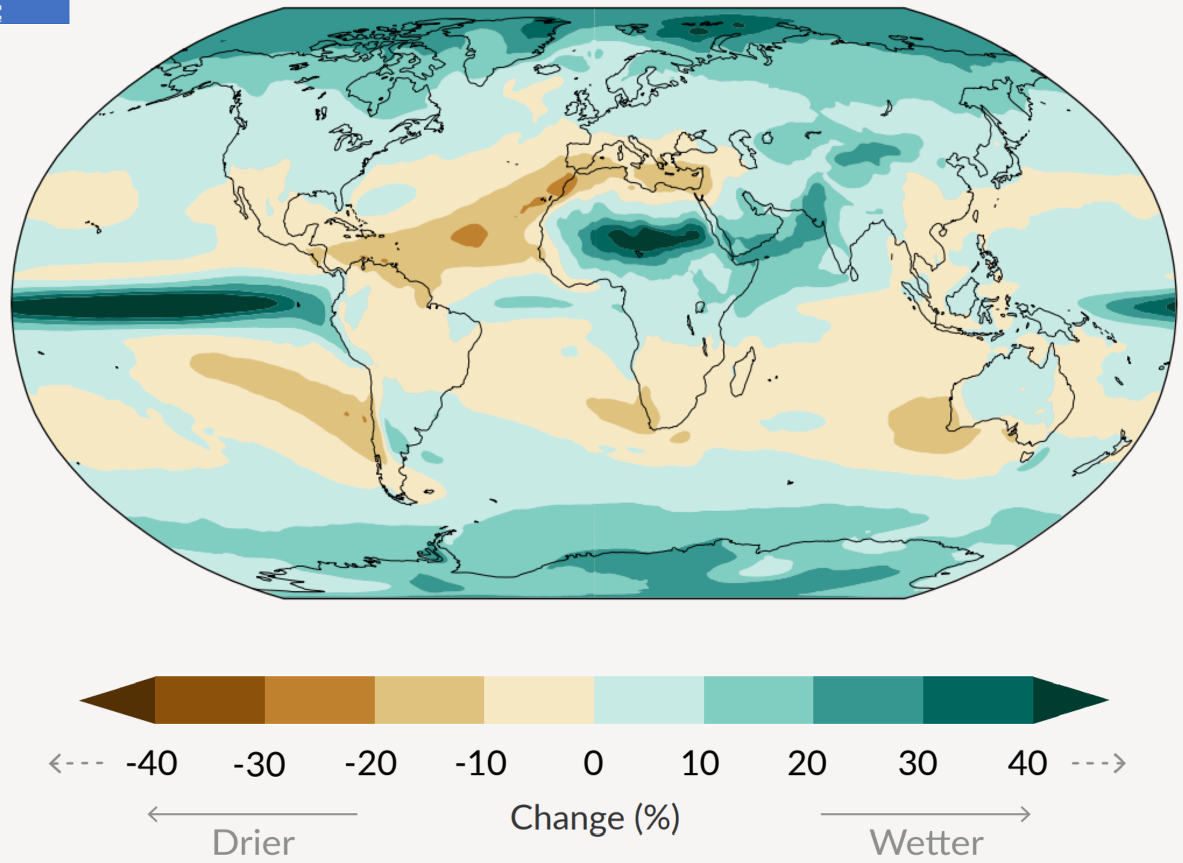
Simulated change at 2°C global warming

relative to 1850-1900

Annual mean temperature change (°C)



Annual mean precipitation change (%)



IPCC Working Group 1 Summary for Policy Makers (2022)

Climate change: UK agriculture and food

CCRA3/CCC (2022)

Risks, opportunities, and benefits of further action

More action needed

Further investigation

Sustain current action

Maintain a watching brief

Average UK wide scores

N4. Risk to soils from changing climatic conditions, including seasonal aridity and wetness.

N10. Risks to aquifers and agricultural land from saltwater intrusion.

N6. Risks and opportunities for agricultural and forestry productivity from extreme events and changing climatic conditions.

N7. Risks to agriculture from pests, pathogens and invasive non-native species.

N9. Opportunities for agricultural and forestry productivity from new/alternative species becoming suitable.

N18. Risks and opportunities from climate change to landscape character.

H9. Risks to food safety and food security from UK climate impacts.

ID1. Risks to UK food availability, safety, and quality from climate change overseas.

ID2. Opportunities for UK food imports or exports due to global climate change.

Met Office

Risk to soils

from changing climatic conditions, including seasonal aridity and wetness

Risk magnitude	
Now	2050s
Medium	High
Score	
More action needed	

Impacts

Erosion

- Heavy rainfall
- Wind

Drought

- Soil moisture deficits
- Peatland drying
- Soil microbiota

Adaptation

Monitoring

Linking adaptation & net zero strategies

- Woodland expansion
- Bioenergy crops
- Soil carbon stocks

Land management advice

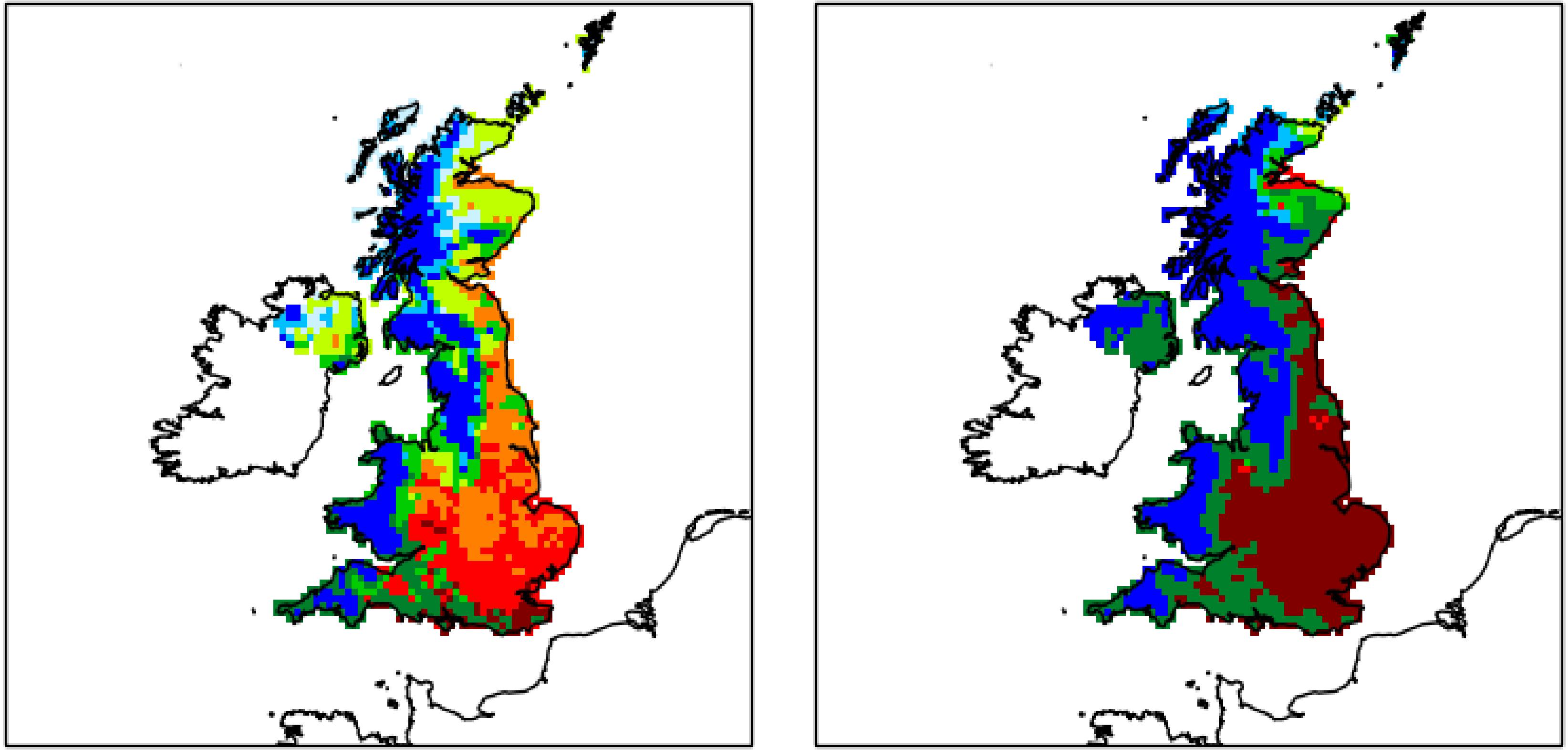
Support for soil health

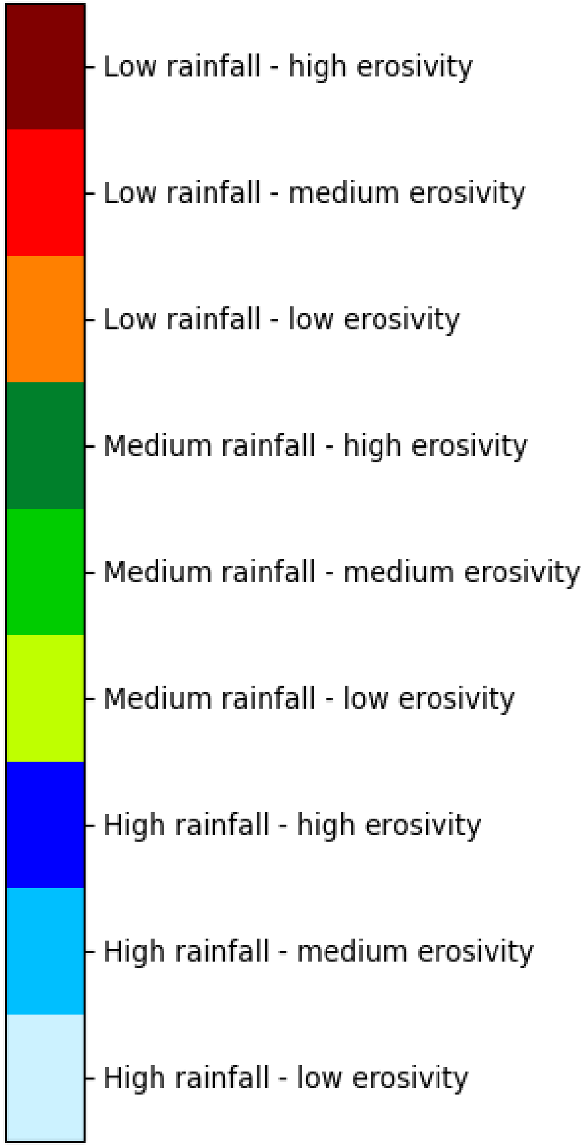
Precision farming

Changes in soil erosion potential

Defra Food, Farming and Natural Environment Climate Service

1990s 2070s





Jemma Davie, James Bacon, Ed Pope (Met Office)

Risks from saltwater intrusion

to aquifers and agricultural land

Risk magnitude	
Now	2050s
Low	Low
Score	
Further investigation	

Impacts

Sea level rise

- Saltwater entry to aquifers
- Increased salinity in land

Irrigation

Consumption

Adaptation

Monitoring

Sustainable use of water resources

- Storage/use of excess winter rainfall
- Rainwater harvesting
- On-farm reservoirs

Extreme events and changing climate

risks and opportunities to productivity

Risk magnitude	
Now	2050s
Medium	High
Score	
More action needed	

Impacts

Productivity

- Heat, cold, wet, drought

2018:

- Carrot yields fell 25-30%
- Onion yields by 40%
- Higher blackcurrant yields

Operations

- Disruption, especially on floodplains

Adaptation

Near-term climate forecasts

Land use option assessments

- Climate resilience
- Changing water availability

Integrating adaptation and net zero

LMTool (winter land management tool)

NFU

CLINTON DEVON ESTATES

UNIVERSITY OF EXETER

Koninklijk Nederlands Meteorologisch Instituut
Ministerie van Infrastructuur en Waterstaat

predictia

LISBOA UNIVERSIDADE DE LISBOA

UNIVERSITY OF LEEDS

EUPORIAS

Falloon et al. (2018)

Met Office

UK 3-month Outlook

Period: November 2022-January 2023
Issue date: 31st October 2022
Next issue: 28th November 2022

3-month summary

- The likelihood of a colder 3-month period overall is slightly greater than normal
- There is a reduced chance of wet conditions and impacts from heavy rainfall
- Chances of dry conditions are greater than normal
- Stormy conditions, and impacts from high winds, are less likely than normal

3-month likelihood of impact

Temperature

25% chance the season will be COLD	60% chance the season will be NEAR AVERAGE	15% chance the season will be MILD
1.3× the normal chance	1.0× the normal chance	0.8× the normal chance

Precipitation

25% chance the season will be DRY	65% chance the season will be NEAR AVERAGE	10% chance the season will be WET
1.3× the normal chance	1.1× the normal chance	0.5× the normal chance

Wind speed

25% chance the season will be CALM	65% chance the season will be NEAR AVERAGE	10% chance the season will be WINDY
1.3× the normal chance	1.1× the normal chance	0.5× the normal chance

Pests, pathogens, invasive non-native species

risks to agriculture

Risk magnitude	
Now	2050s
Medium	High
Score	
More action needed	

Impacts

Productivity

- Impacts on livelihoods and businesses

Large-scale outbreaks

- Risks to food security

Adaptation

Monitoring, surveillance, risk assessment, bio-security, contingency planning

Risk reduction strategies

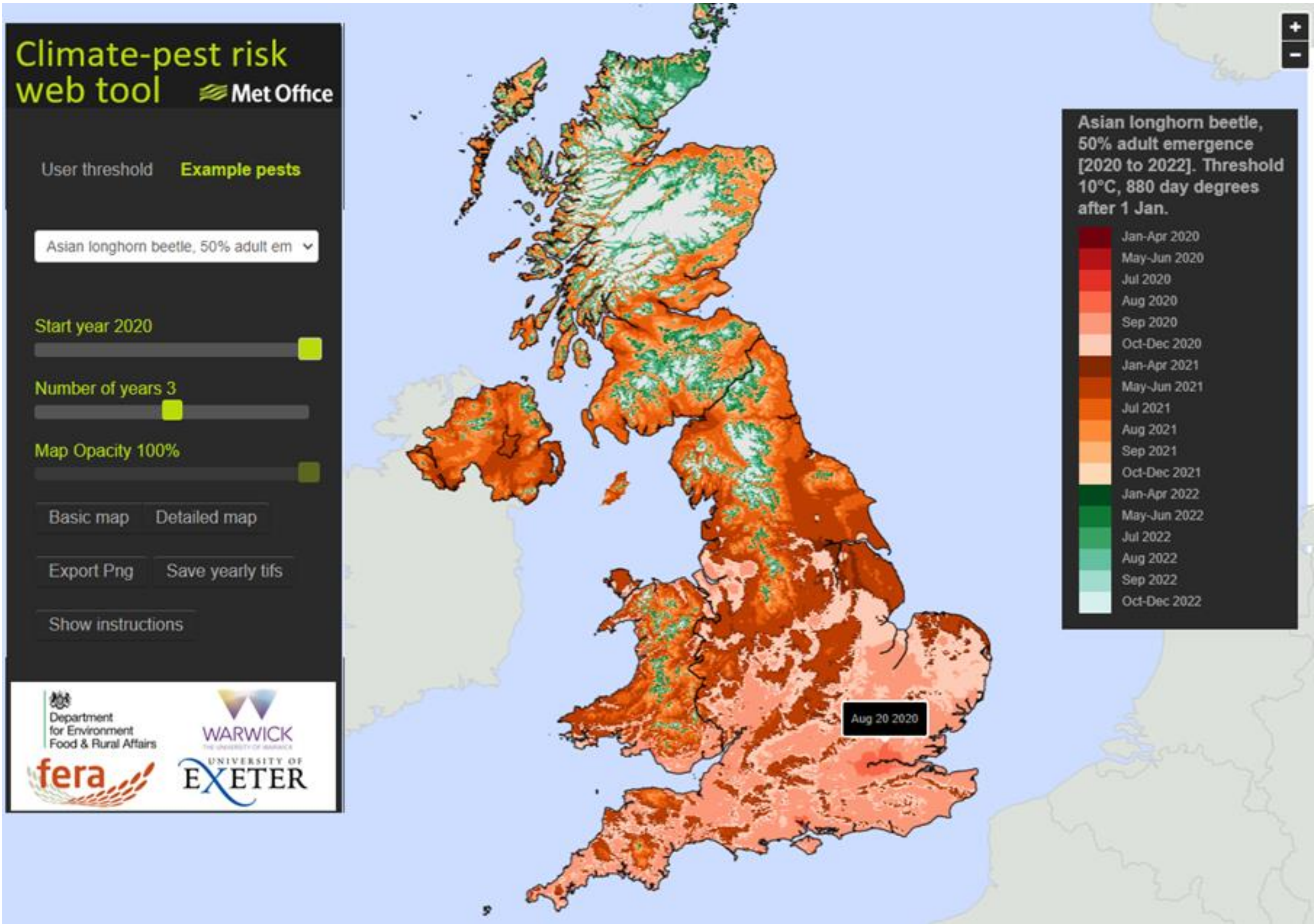
- Resistant varieties
- Increased diversification of plant/livestock species and varieties

Inclusion of climate change in risk assessments

UK Climate-pest risk web tool

Dr Deborah Hemming* (Lead) & Neil Kaye (Met Office), collaborating with experts at…
Defra, SASA, Fera, Universities of Exeter and Warwick

- Interactive web tool for visualising and outputting plant pest or pathogen risk maps
- Combines 1km gridded UK climate data with climate-related pest or pathogen models
- Range of priority UK pests or pathogens



* Scientific Manager, Vegetation-Climate Interactions
debbie.hemming@metoffice.gov.uk

https://www.metoffice.gov.uk/hadobs/pests_1km_v1/

New/alternative species

opportunities for agricultural and forestry productivity

Risk magnitude	
Now	2050s
Medium	High
Score	
Further investigation	

Impacts

Climate-enhanced suitability for *new* systems

- crop species, varieties, cultivars, cropping combinations

Climate-enhanced potential for *existing* crops

- New UK locations
- Higher yields

Adaptation

Assess potential for a wider range of crops

Information on changing climate suitability and resilience

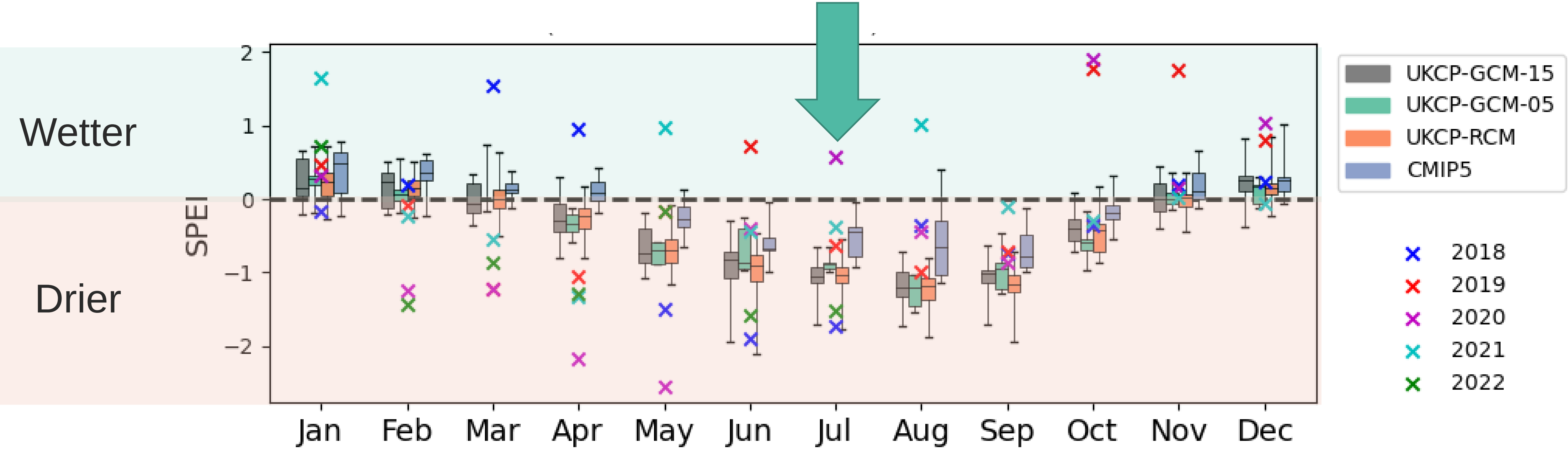
- Crop breeding programmes
- Trials
- Commercial programmes

Identify opportunities for agroforestry and inter-cropping

Informing crop breeding for resilience

Defra Food, Farming and Natural Environment Climate Service

Increased risks of summer drought to the UK wheat growing area



Standardised Precipitation-Evapotranspiration Index
2070s relative to the present day.
UK-wheat area average.

Jemma Davie, Chris Kent, Ed Pope (Met Office)

Met Office

Landscape character

risks and opportunities from climate change

Risk magnitude	
Now	2050s
Medium	High
Score	
Further investigation	

Impacts

Natural responses to
- Warmer temperatures
- Flooding, drought, storm damage
- Freshwater eutrophication
- Wildfire

Changing character

Ecological impacts

Adaptation

Collaborative local-national planning approaches that incorporate climate change

Understanding public perception to help manage and innovate change.

Risks to food safety & security

from UK climate impacts

Risk magnitude	
Now	2050s
High	High
Score	
Further investigation	

Impacts

Food safety

- Increased extreme events, changing rainfall and temperature
- Occurrence/persistence of bacteria, viruses, parasites, harmful algae, fungi and their vectors

Food security

- Stock shortages
- Price impacts
- Nutrition

Adaptation

Horizon scanning, monitoring

Strategies to limit risk of fungal infections

- Optimal harvest timing

Adoption of new farming techniques

- Deep ploughing (ergot control)
- Targeted fungicide application
- Resistant crop varieties
- Bio-control or genetic modification measures

Met Office

Risks to UK food availability, safety and quality

from climate change overseas

Risk magnitude	
Now	2050s
High	High
Score	
More action needed	

Impacts

Exacerbate disruption of global production/supply chains

- Droughts, storms, pests and diseases
- Risk cascades
- Long-term tipping points?

Concern areas

- Fruit & vegetable imports (80%/50% respectively)

Adaptation

Removing barriers, enabling and encouraging industry adaptation

Increasing supply chain resilience

Regulatory measures

Insurance instruments

UK food imports or exports

opportunities due to global climate change

Risk magnitude	
Now	2050s
Low	Low
Score	
Maintain a watching brief	

Impacts

Comparative advantage

- Relative importance of extreme events, long-term climate trends, and geographical patterns

- e.g. rainfed grass yield increases anticipated in Northern Europe

Broader drivers

- Dietary trends

Adaptation

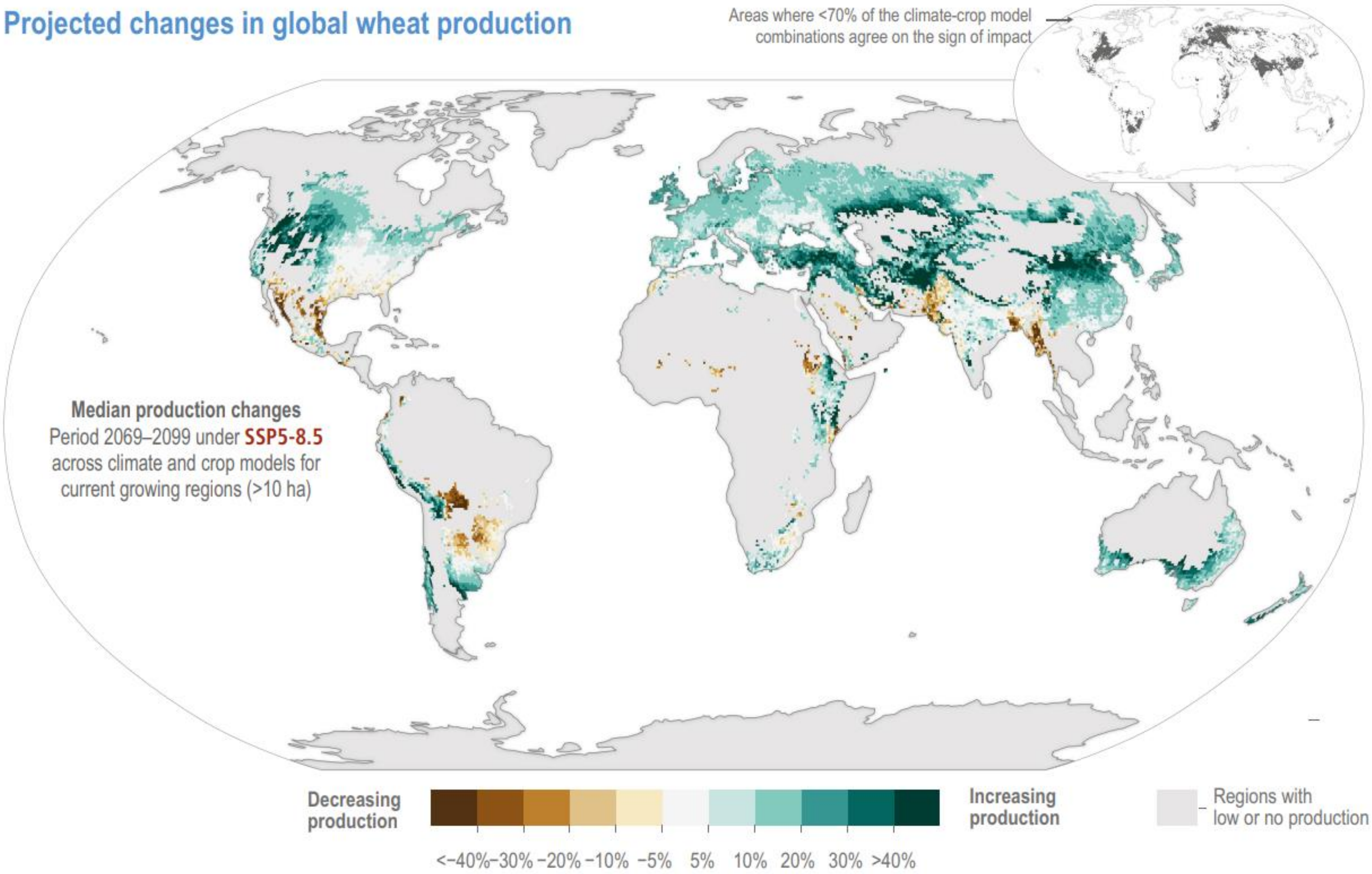
Access to a broad range of international markets

- Capitalise on opportunities
- Increase shock resilience

Robust planning for demand-side changes

- Plant-based diets
- Local food sourcing

Global wheat yield changes



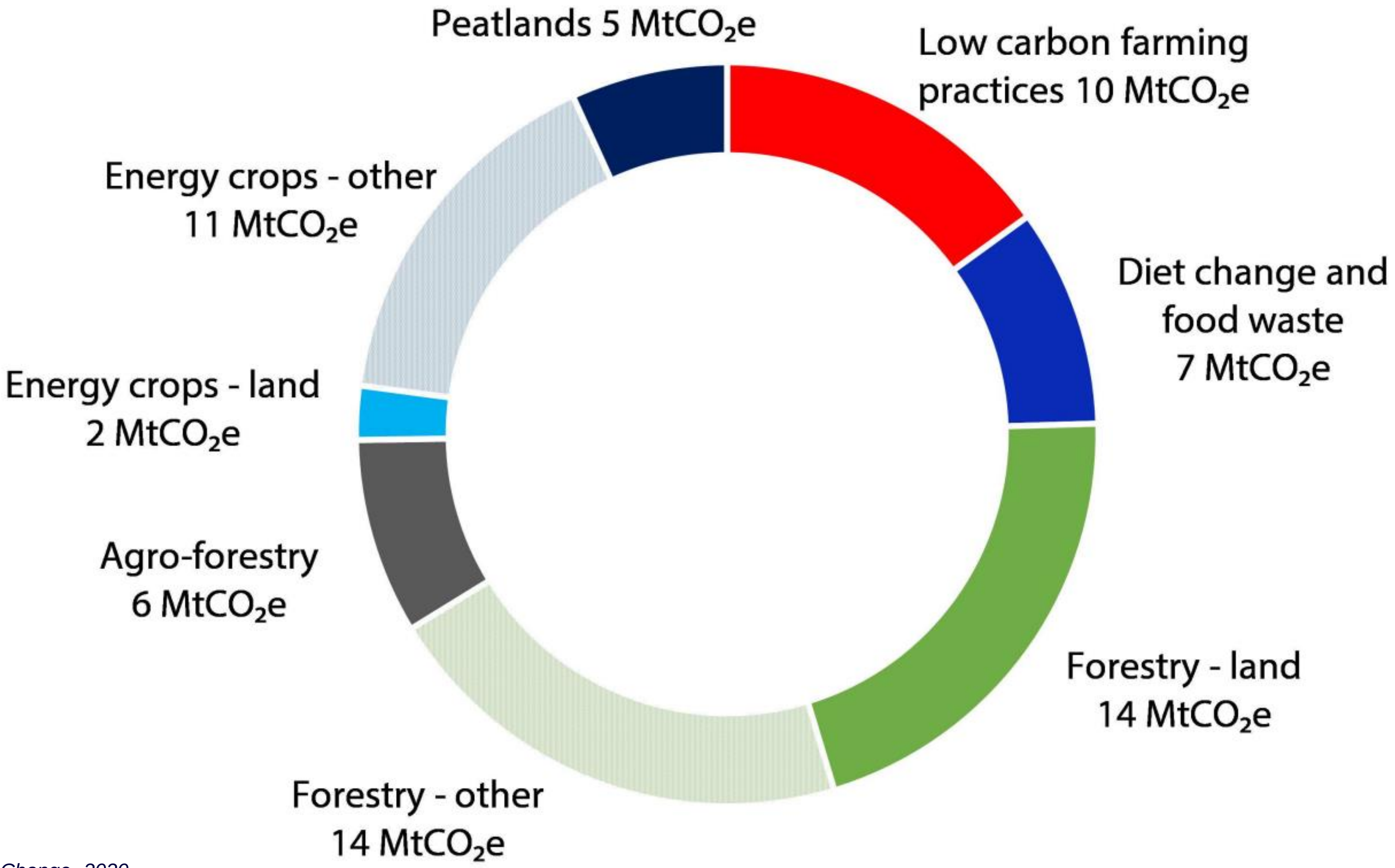
IPCC WG2 Global to Regional Atlas 2022.

Net zero and UK agri-food

GHG savings from measures to reduce agriculture and land use emissions, 2050

Need
- **Systems approaches -** balance net zero goals with other essential functions of land
- **Rapid food system transformation:** changes in farming practices & consumer behaviour
- **~one-fifth of agricultural land released** by 2050 for climate mitigation

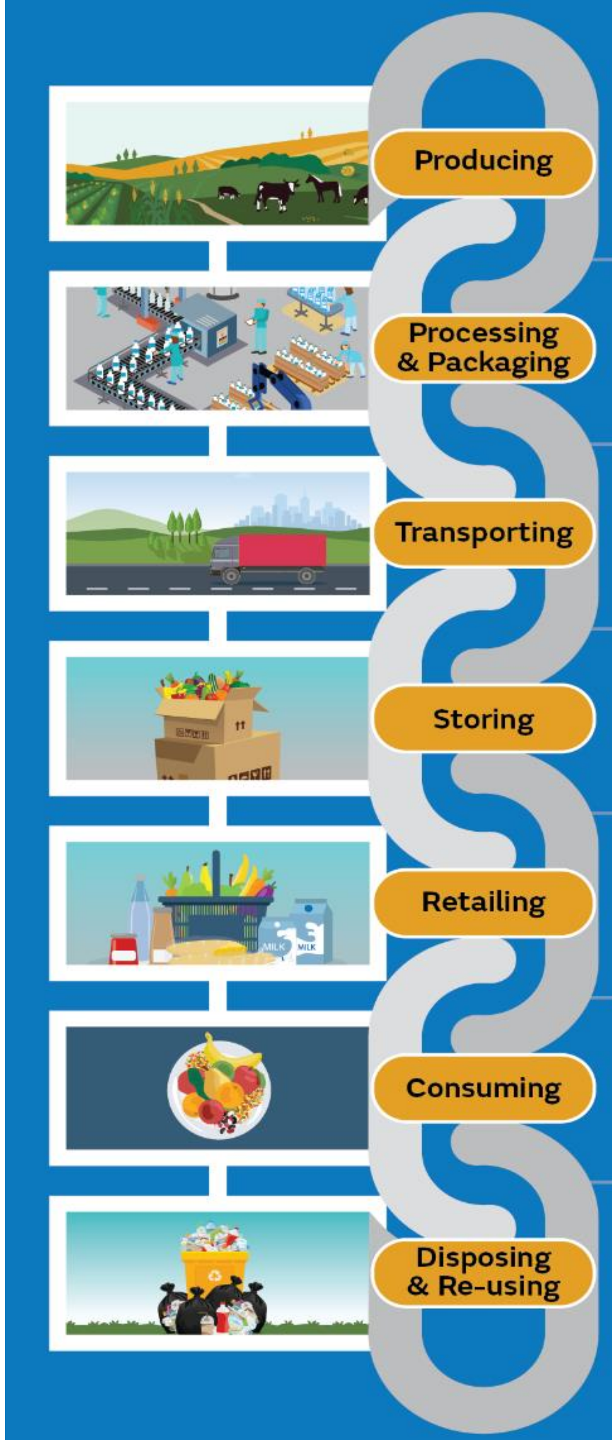
Scenarios for Paris-compliant healthy food systems:
- **Rising food prices**
- **Less land-intensive diets**
- **Win-win of eliminating food waste.**



Committee on Climate Change, 2020
Elliott & Bhunnoo (2021), GFS (2021)

Concluding thoughts

- **Risks and opportunities for UK food security** – domestic and overseas – need for more:
    - Action (adaptation)
    - Investigation (evidence)
- **Science and services** can support resilience and adaptation
- **Whole food chain, systemic approaches** needed that bring diverse data sources together and consider both adaptation and net zero
- **Challenge: 'Last mile' services, adoption, and implementation** amongst farmers & wider industry – requires effective dialogue and co-design



Questions?

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