

28th Jan 2020

AHDB Arable Regional Agronomy Event

Michelle Nuttall, AHDB Knowledge Exchange Manager (North West & Northern Ireland)



CEREALS & OILSEEDS

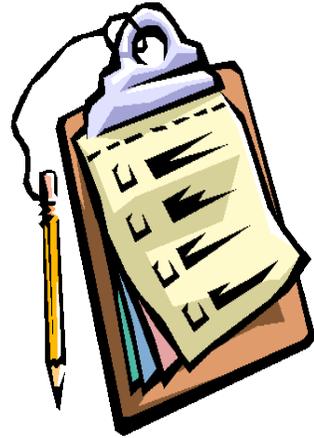


POTATOES

Session 1: Cereals and Oilseeds

09:30	Registration and coffee
10:00	Chair's welcome Michelle Nuttall, AHDB
10:10	Integrated Pest Management Slug management – Emily Forbes, Harper Adams University Disease management – Catherine Harries, AHDB
10:50	Soils and cultivations Anne Bhogal, ADAS
11:40	Refreshment break
11:55	Clean air strategy Sajjad Awan, AHDB
12:15	Market update Alice Bailey, AHDB
12:35	Session 1: Closing comments Michelle Nuttall, AHDB
12:45	Lunch

Housekeeping



BASiS

City & Guilds

NR050

National Register Of Sprayer Operators



[@AHDB_Cereals](#)

[@Cereals_NW_NI](#)

[#monitorfarm](#)

Are you keeping up to date?

Please only complete this form if:

- I am a new contact and do not currently receive anything from AHDB
- I am an existing contact and would like to amend my details
- I am not receiving the information I am interested in

Please write as clearly as possible to help us get your details correct and either hand it to one of our AHDB team or post to: Customer Service Team, AHDB, Stoneleigh Park, Kenilworth, CV8 2TL

Contact details	
Name	Title <input type="text"/> First name* <input type="text"/> Surname* <input type="text"/>
Job Title*	<input type="text"/>
Business name*	<input type="text"/>
Address	No. and street <input type="text"/>
	Town <input type="text"/>
	County <input type="text"/>
	Post code <input type="text"/>
	Country <input type="text"/>
Telephone	<input type="text"/> Mobile phone <input type="text"/>
Email address	<input type="text"/>

How should we keep in touch?

If you would like to receive updates from AHDB e.g. the latest research, market intelligence, disease alerts, invitations to events and news on consumer marketing campaigns which could help your business to become more competitive and sustainable please tick the relevant box below to confirm you are happy with us contacting you using these channels. (Please note that not all information is available through all channels so we suggest you tick as many as you are happy with). We may use your details to improve our products and services but we will not sell your personal information to any 3rd parties.

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North West Regional Agronomy Event

Integrated Pest Management

Slug Management

Emily Forbes, Harper Adams University



Sustainable use of pesticides for slug control

Emily Forbes

eforbes@harper-adams.ac.uk

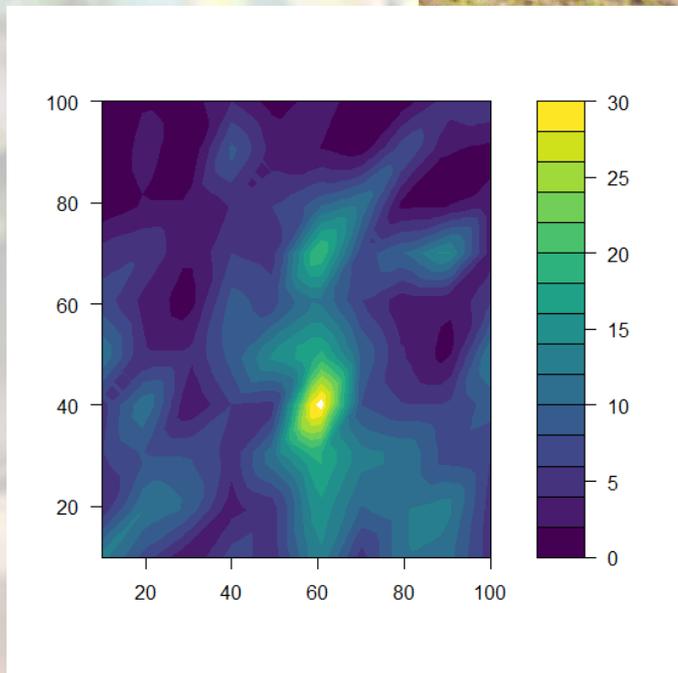


**Harper Adams
University**



THE PROBLEM





A POSSIBLE SOLUTION

Field sites



16 fields

Crops:
Wheat
OSR
Fallow
Spelt

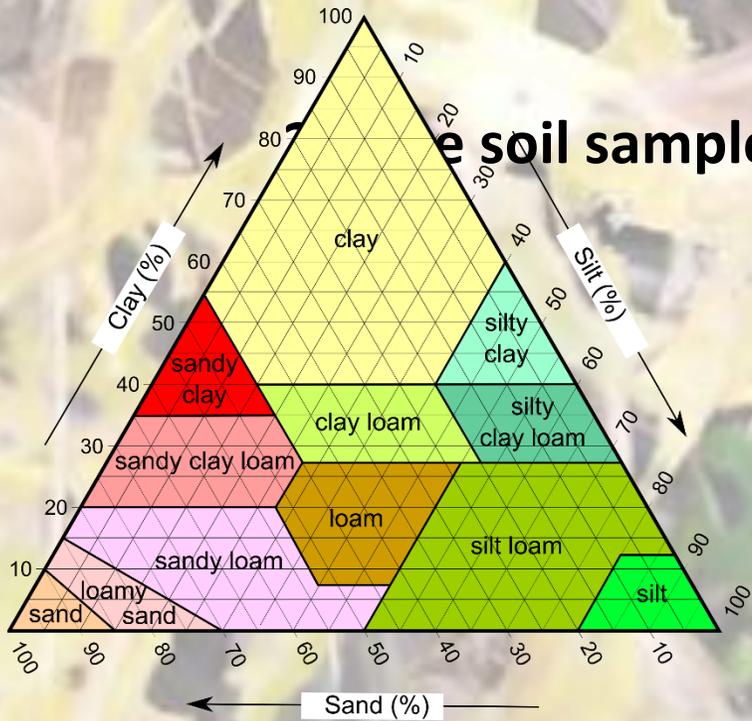
Cultivation techniques:
Direct drilled
Min till

Pellet applications:
0-3 applications
Metaldehyde
Ferric phosphate





the soil samples within and outside of patches





Precision
Decisions

DRIVING FARMING FORWARDS

AHDB

CEREALS & OILSEEDS

4. Work with industry to develop a usable tool for targeted

research into

CERTIS

Growing Together

How you can help...

- Input from industry, thoughts on slug distributions, e.g. do you already target pellets?
- Field sites for 2020-21
- Reply to survey

North West Regional Agronomy Event

Integrated Pest Management Disease Management

Catherine Harries, AHDB



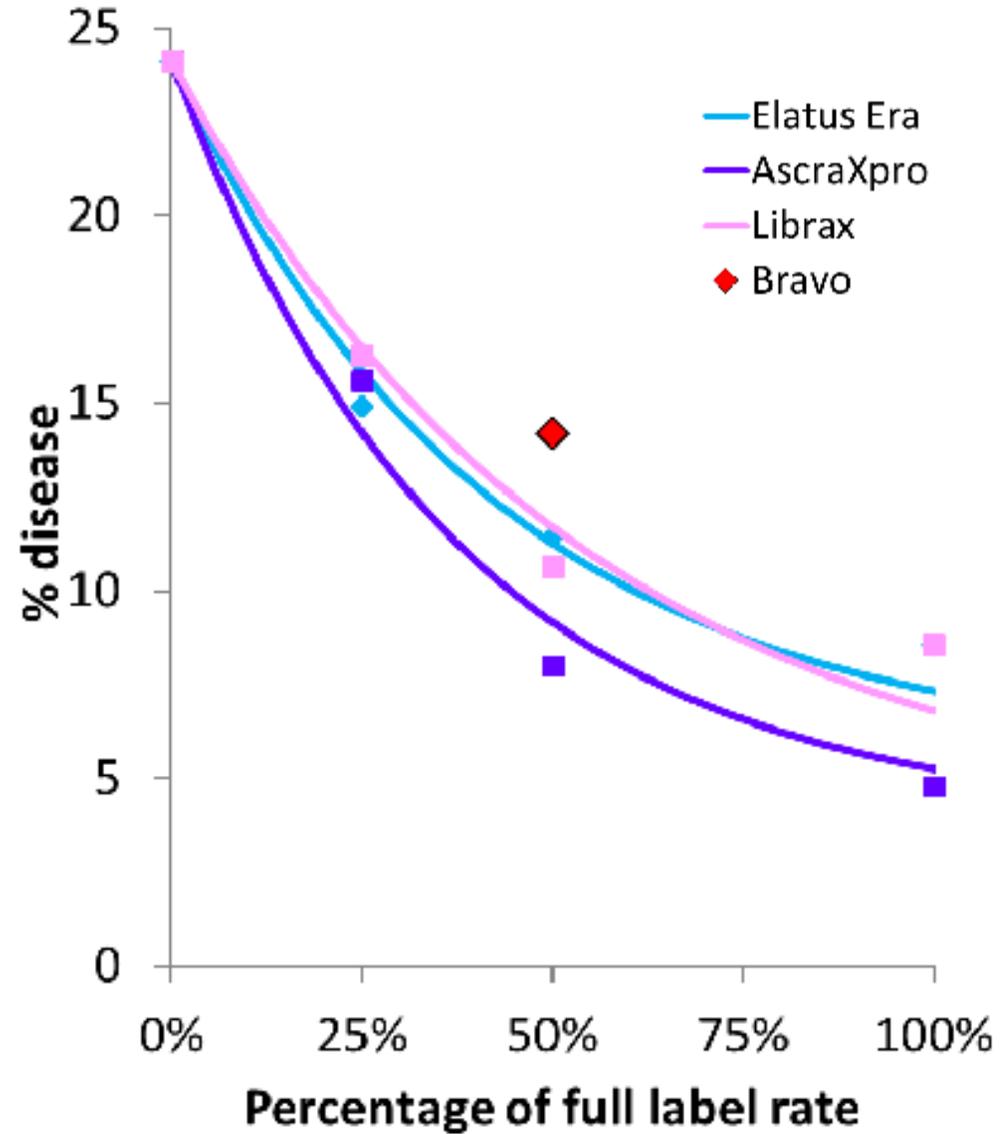
Outline

- Overview of AHDB disease work
- Septoria fungicide performance and resistance update
- OSR forecasting tools
- Variety selection tool

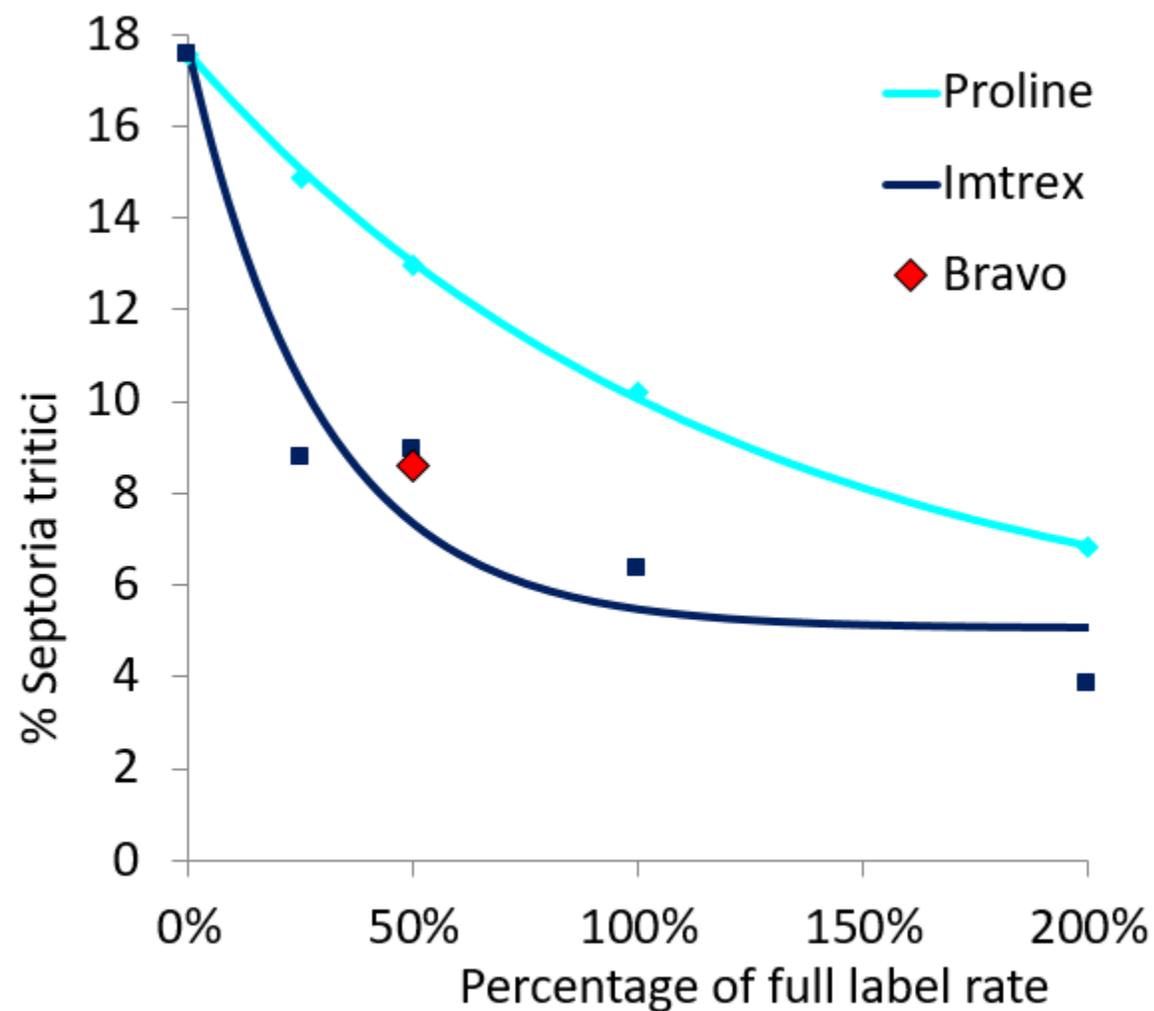
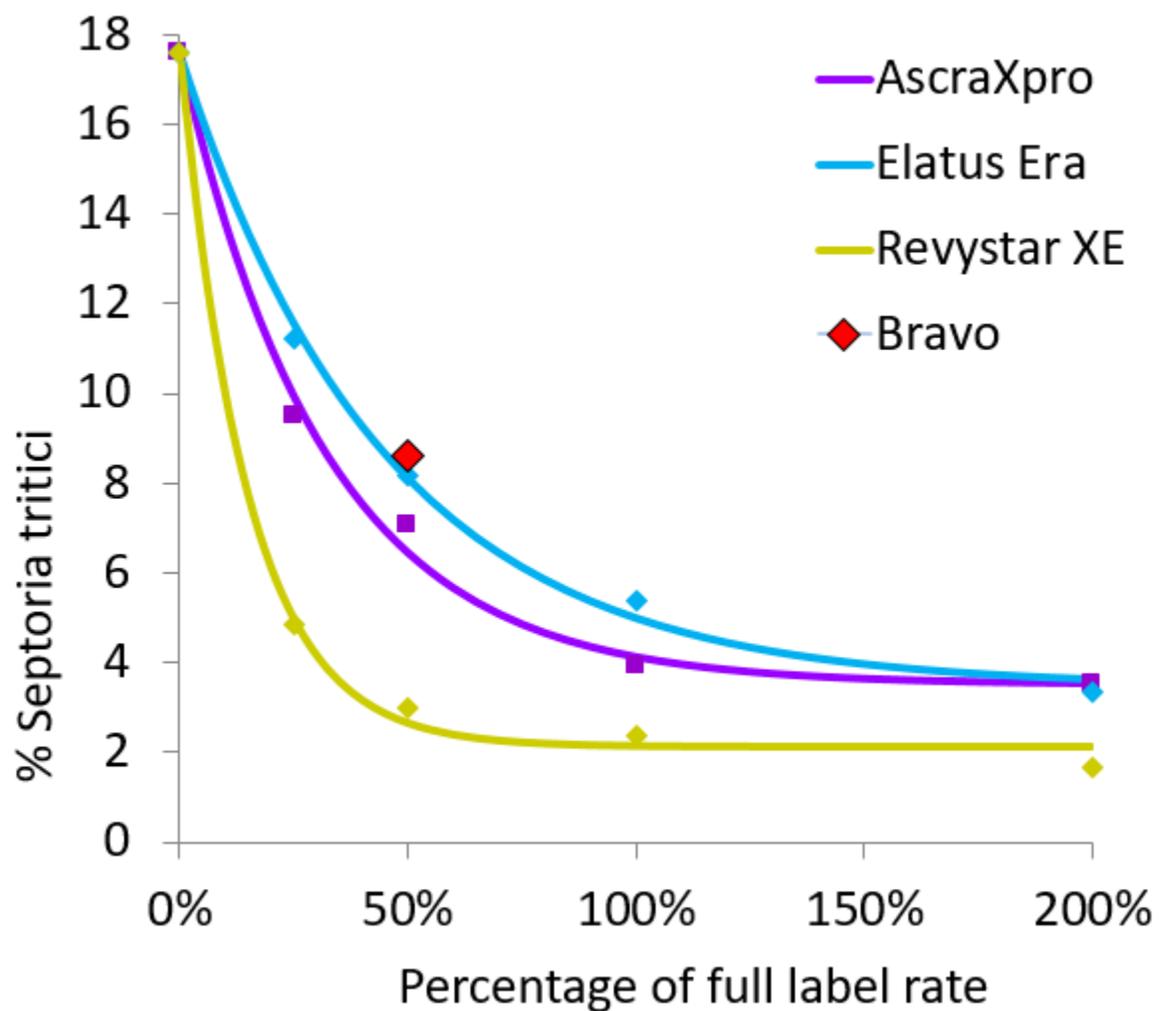


AHDB disease work

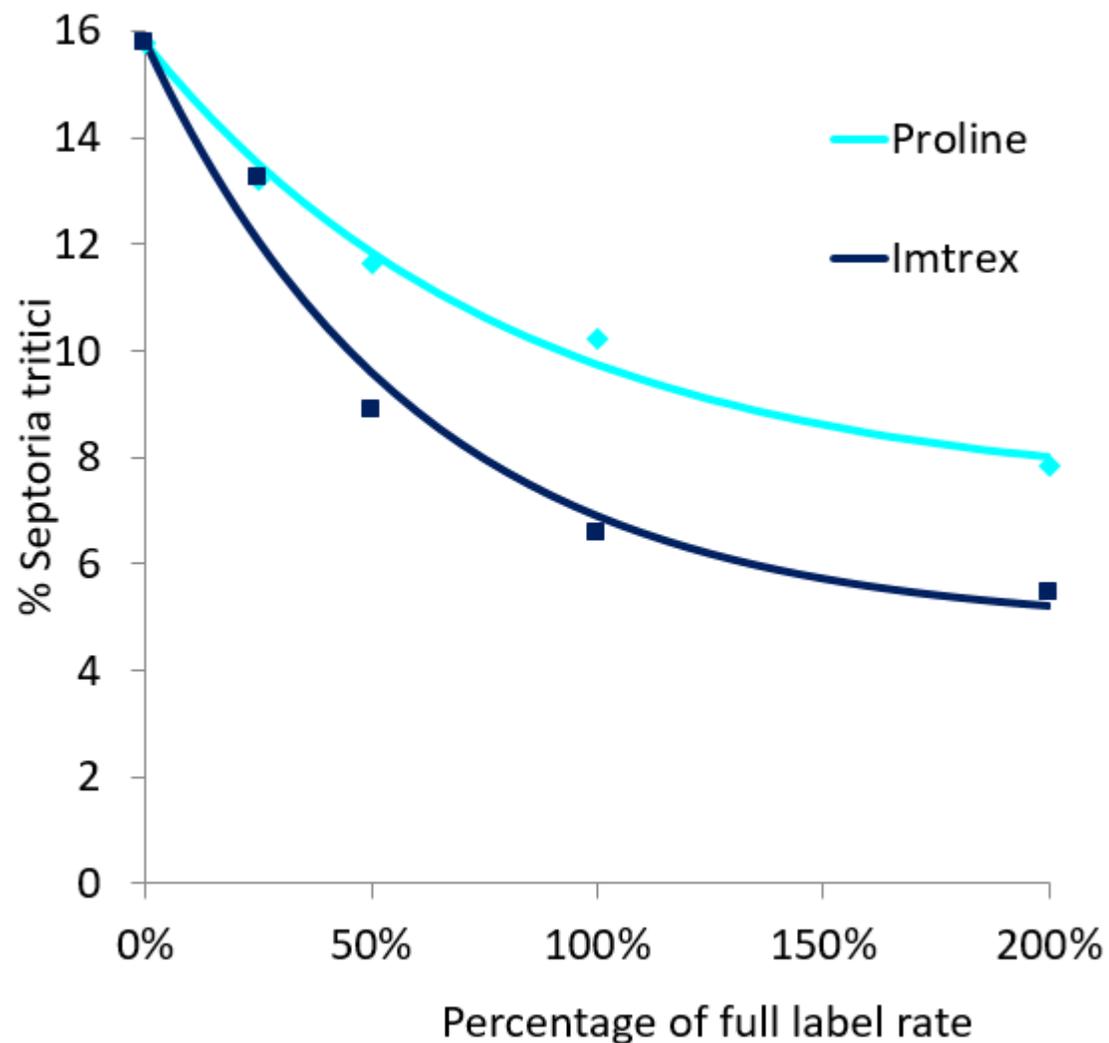
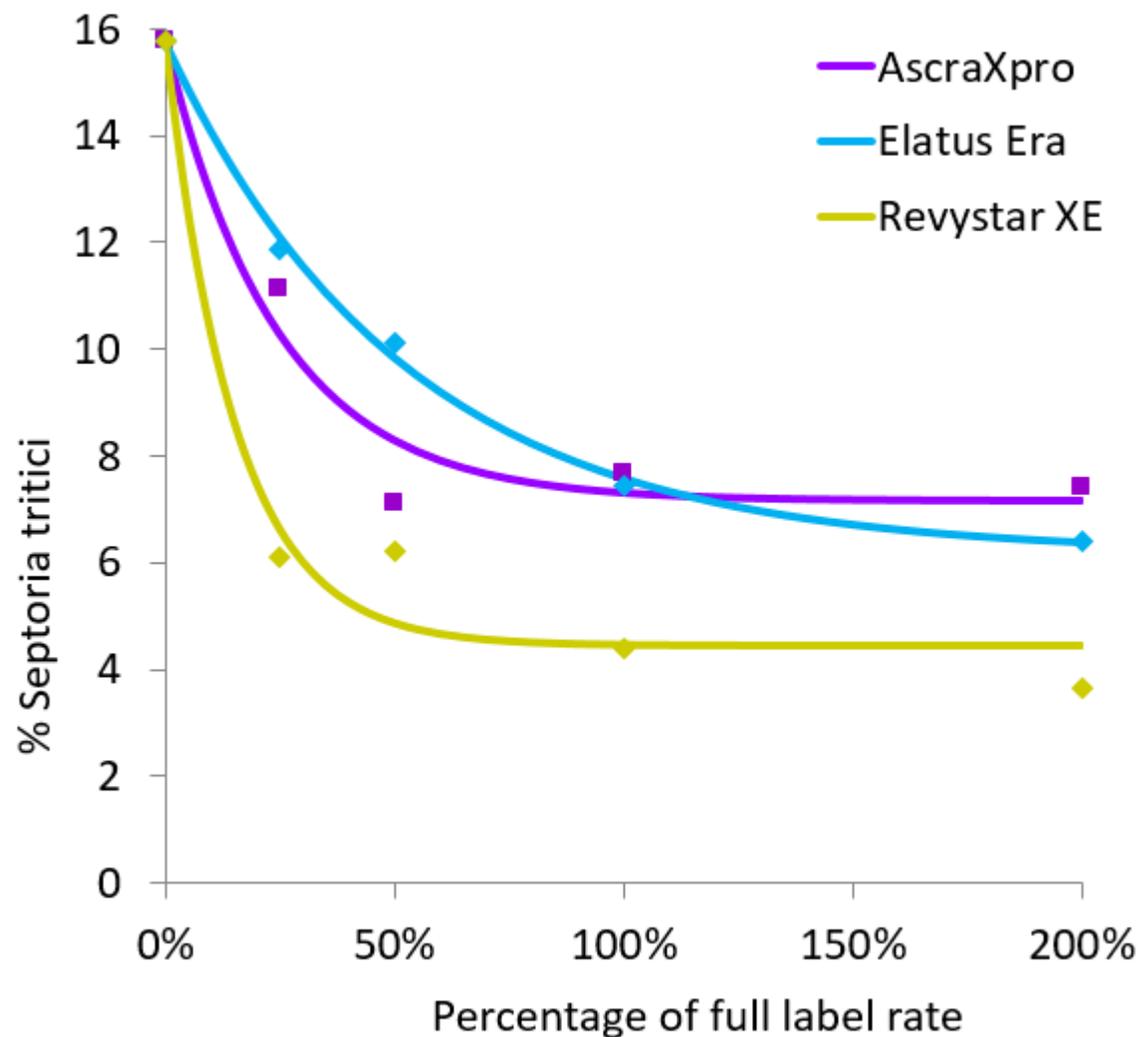
- Fungicide Performance



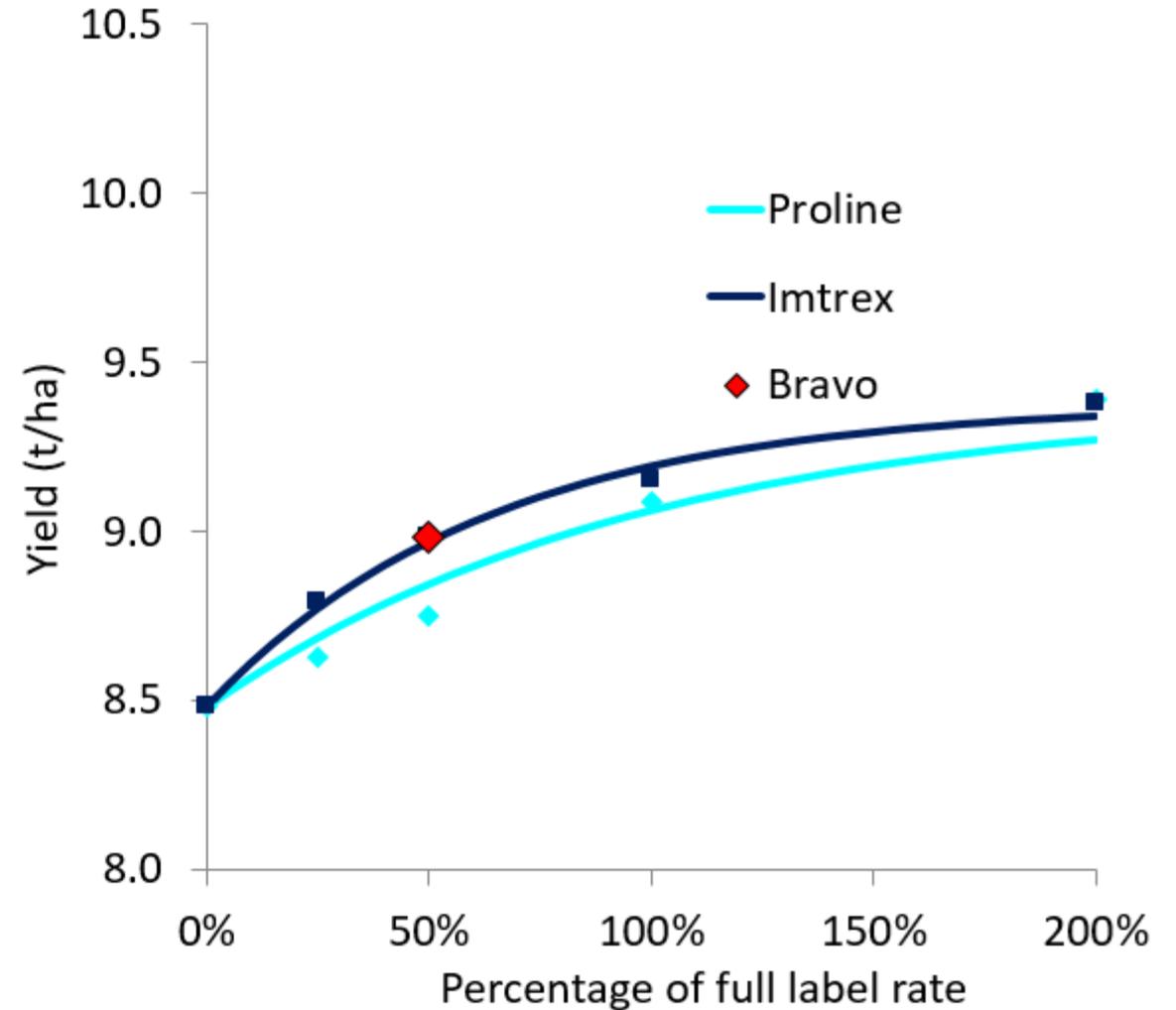
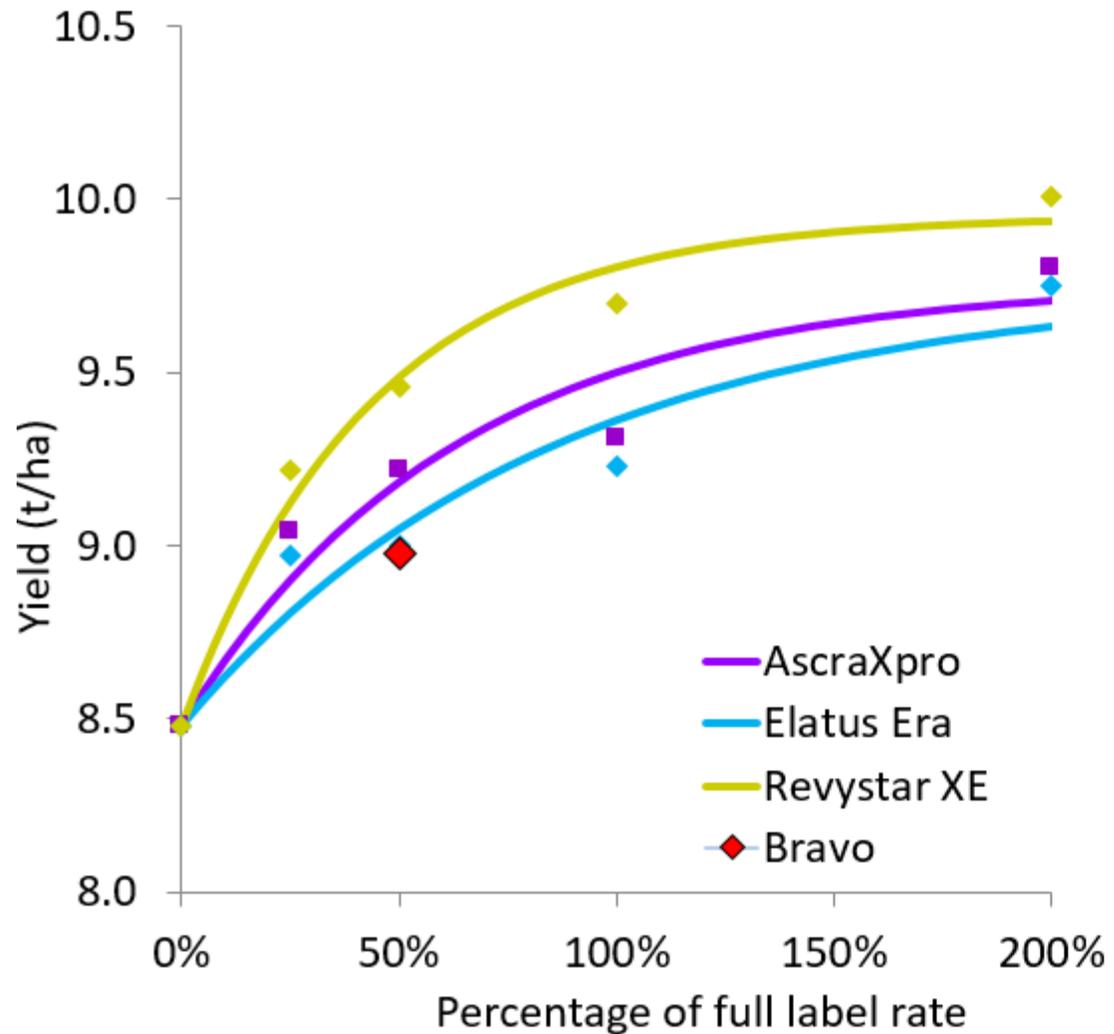
Septoria protectant 2017–19 (15 trials)



Septoria curative 2017–19 (6 trials)



Septoria trial yields 2017–19 (20 trials)

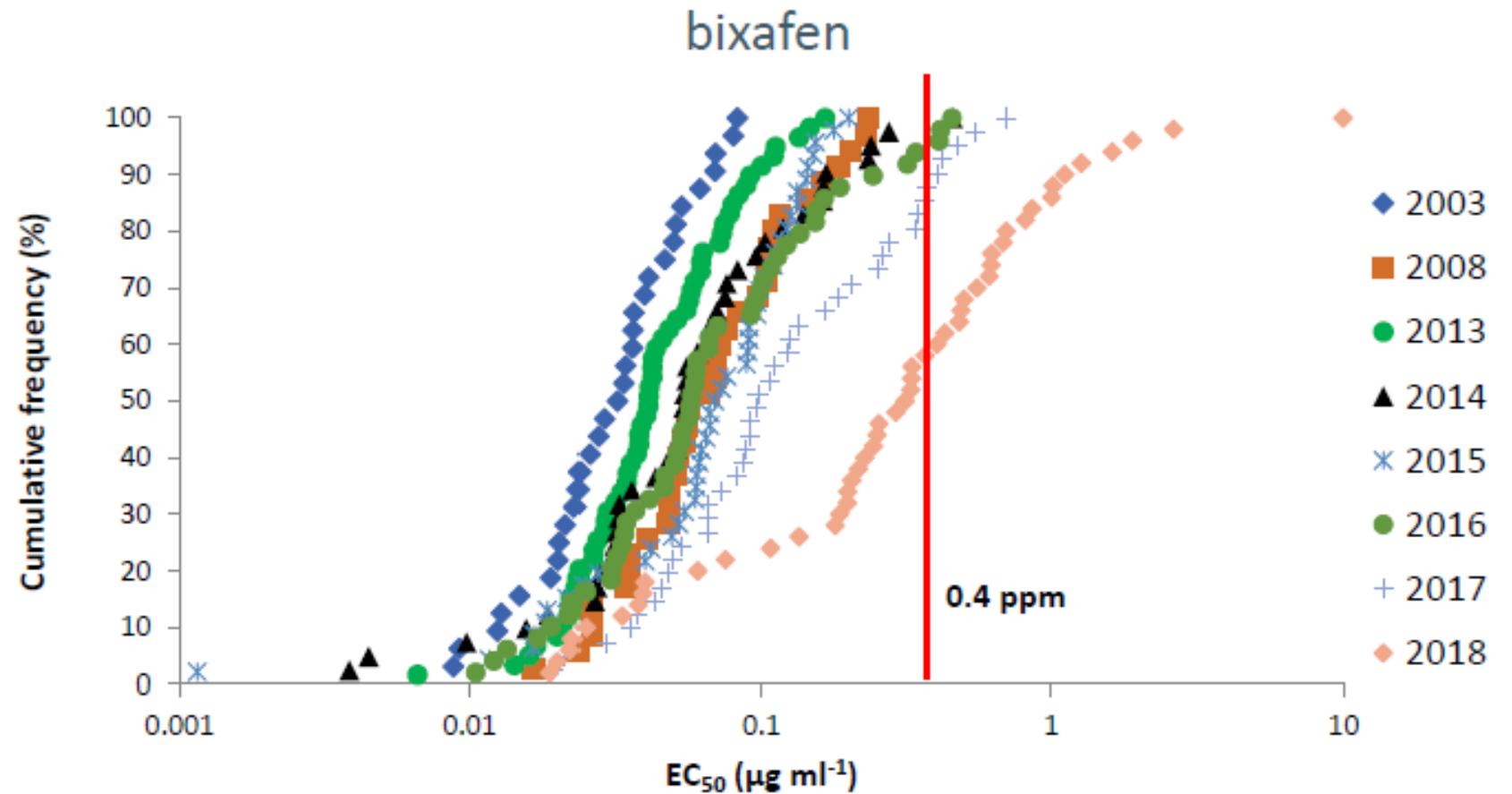


AHDB disease work

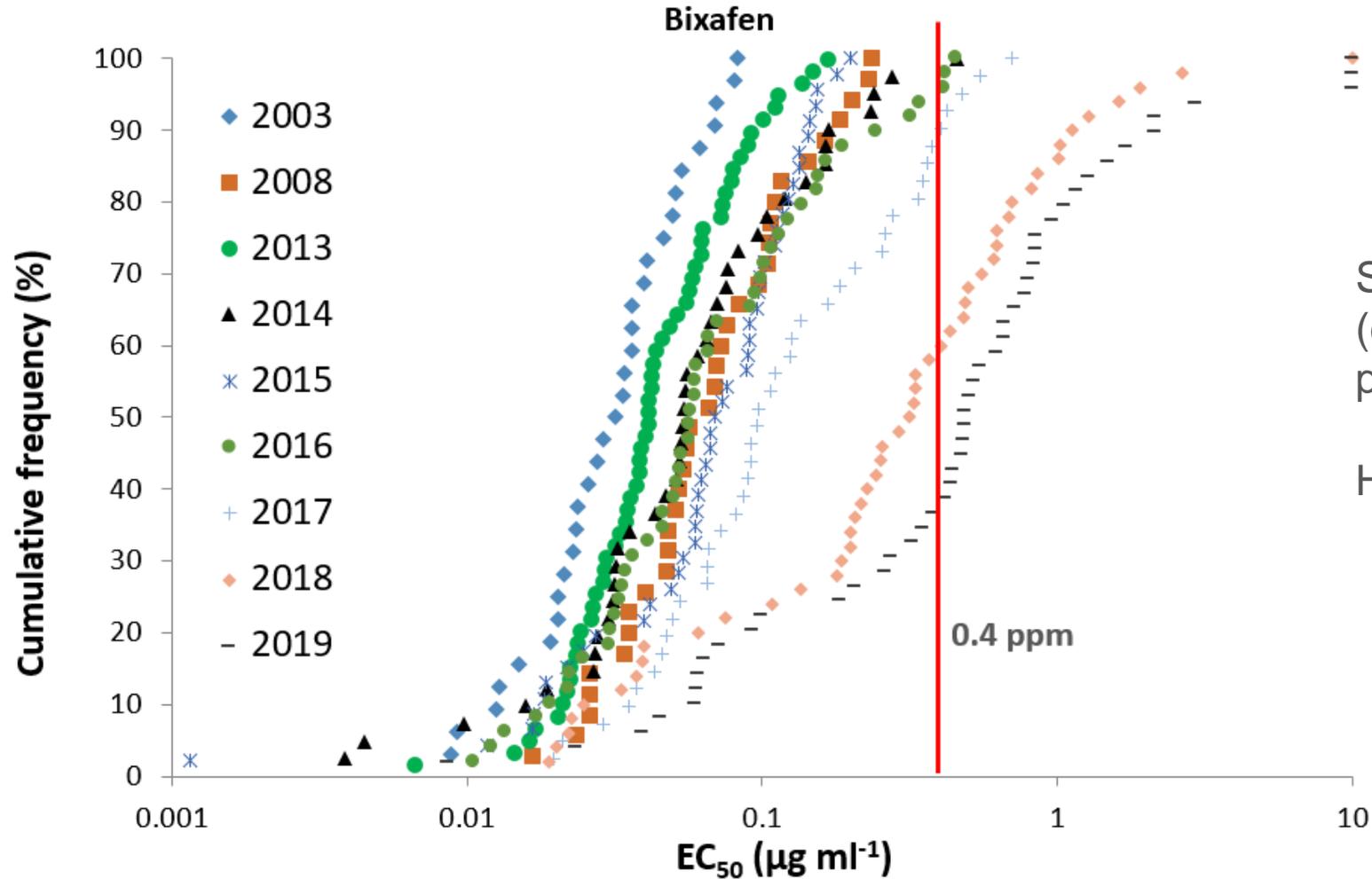
- Fungicide resistance monitoring
- FRAG



Rothamsted (updated 2018): SDHI



Rothamsted early season monitoring 2019 (n=49)

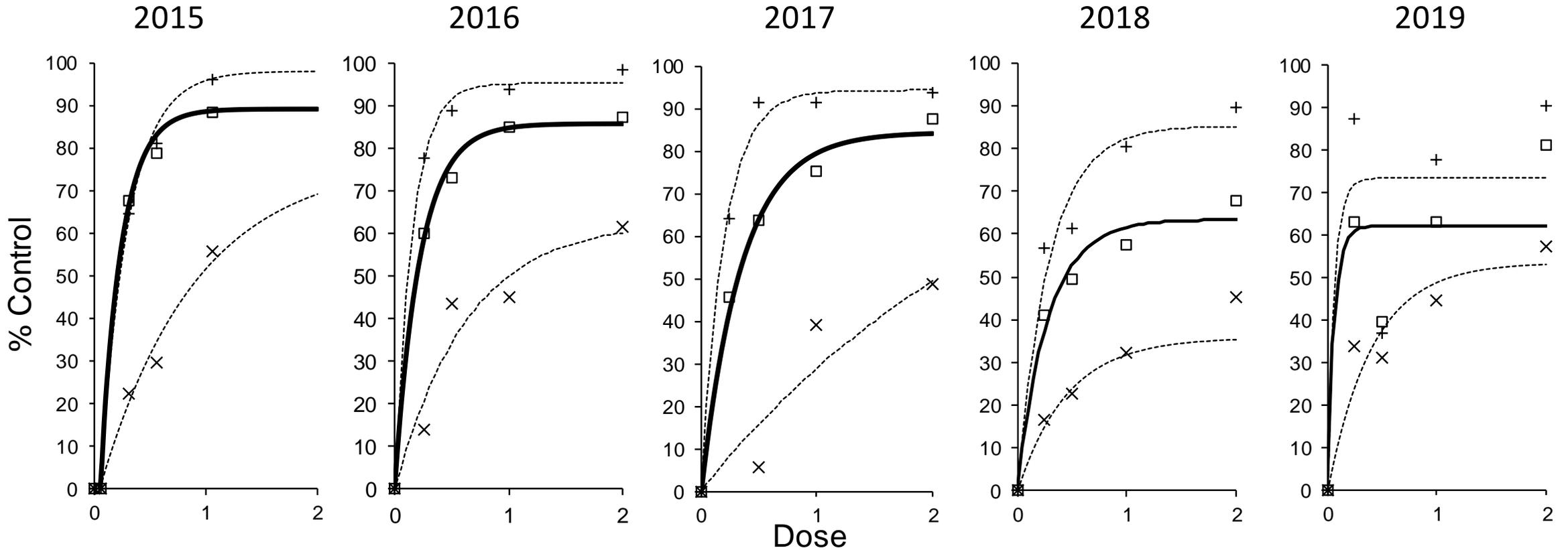


Strains less sensitive to SDHIs
(e.g. T79N and N86S) now widely
present in populations

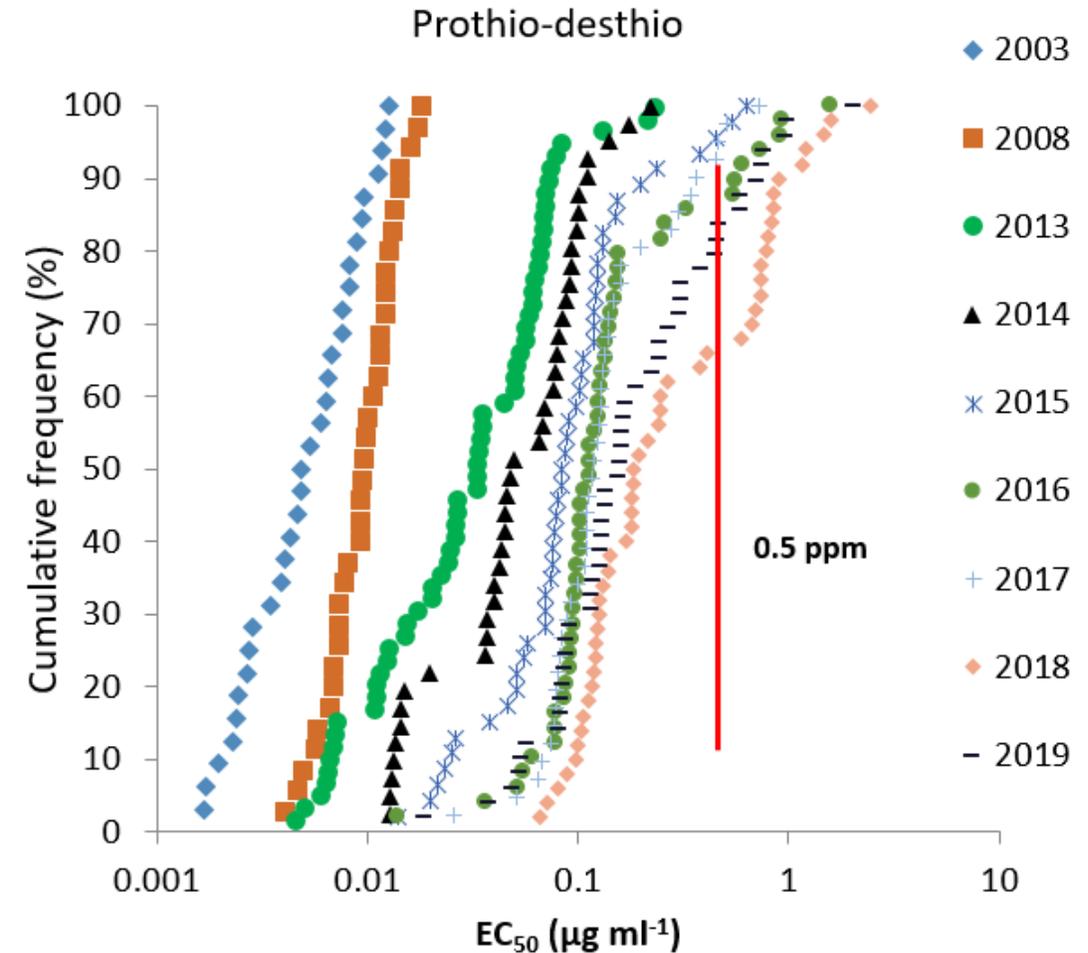
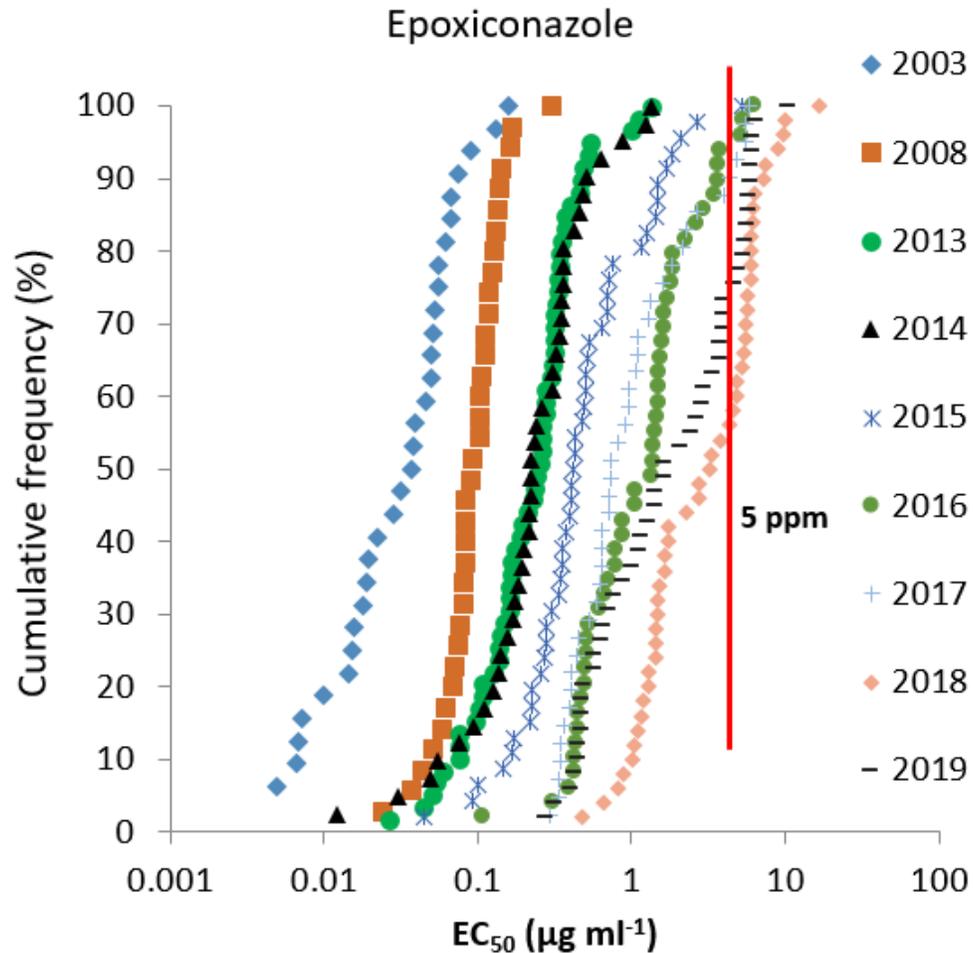
H152R overwintered at this site

SDHI decline and stabilisation?

Fluxapyroxad

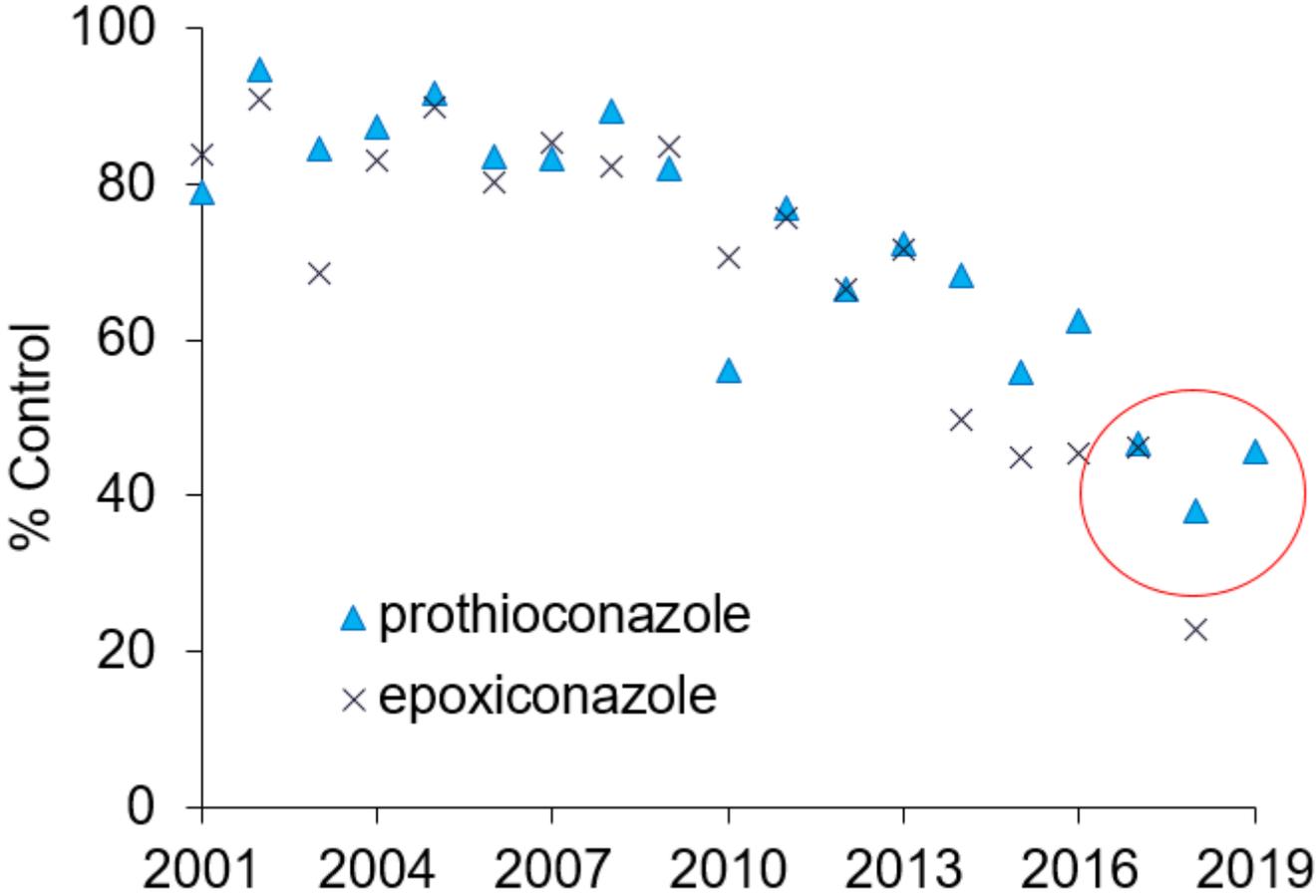


Rothamsted early season monitoring 2019



Azole efficacy on septoria tritici (2001–19)

Protectant activity at full rate



AHDB disease work

Research projects

2018/2019 RL ratings:
 KWS Santiago = 4.3
 JB Diego = 5.3
 Revelation = 6.3

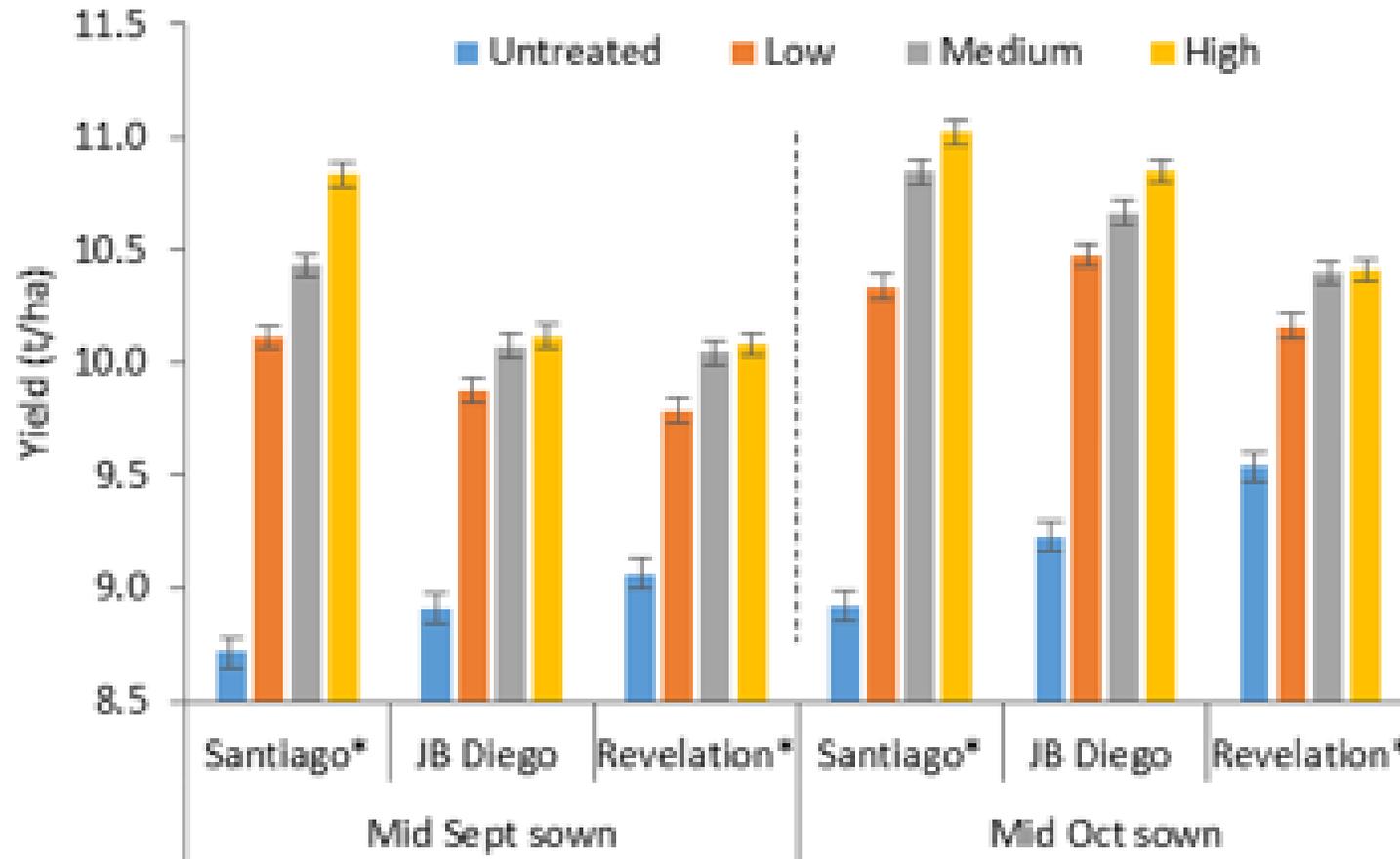


Figure 2. Yield (t/ha adjusted to 85% DM), all sites, for 3 varieties at early and late sowings in 2016 and 2017 (9 sites)

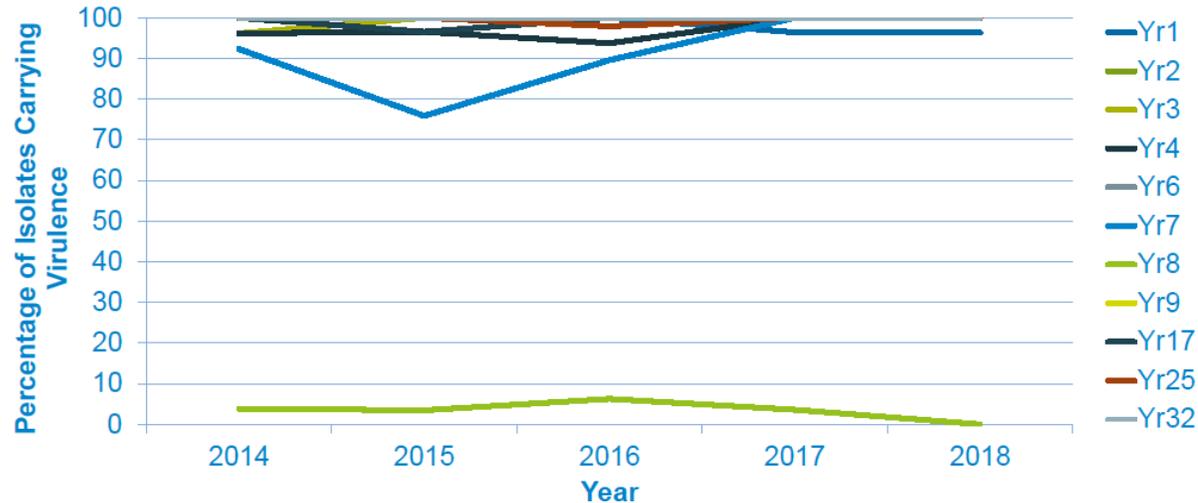
AHDB disease work



**2020 UKCPVS
STAKEHOLDER EVENT
Book your place**

**Wednesday 4 March, 2020
9.30am-1.00pm
NIAB Park Farm**

Wheat Yellow Rust Virulence Frequencies



AHDB disease work

- Sclerotinia forecast
- Phoma forecast
- Light leaf spot forecast

Sclerotinia forecasting

Risk period

- Relative humidity $>80\%$ + air temperatures are at, or above, 7°C for more than 23 hours



Weather-based forecast

Sclerotinia infection risk alerts

Weather alerts Spore numbers

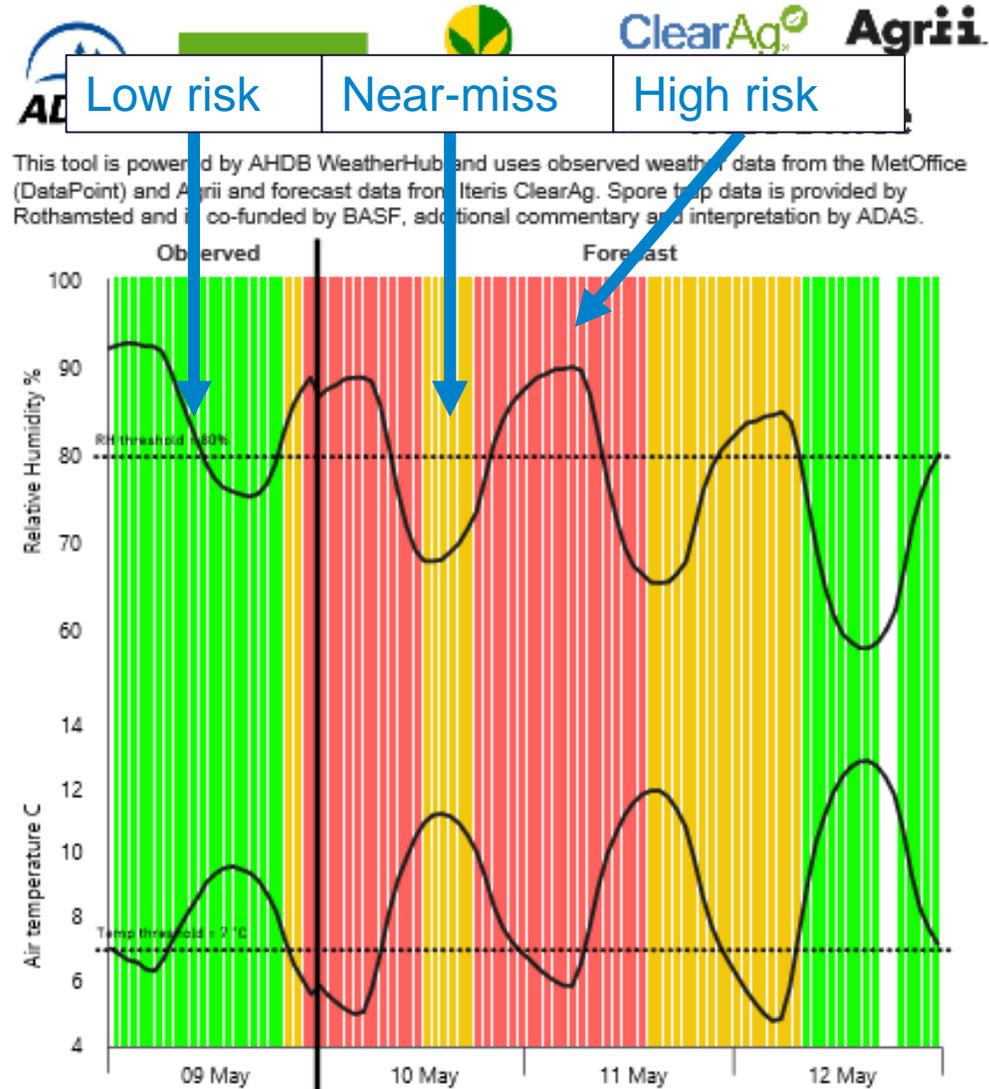
Region: All

Sclerotinia infection conditions over today and next 48 hrs

< 21 hrs 21-22 hrs or >=23 with 'near miss' >= 23 hrs

© 2019 Microsoft Corporation. Bing

~150 weather-based forecast locations

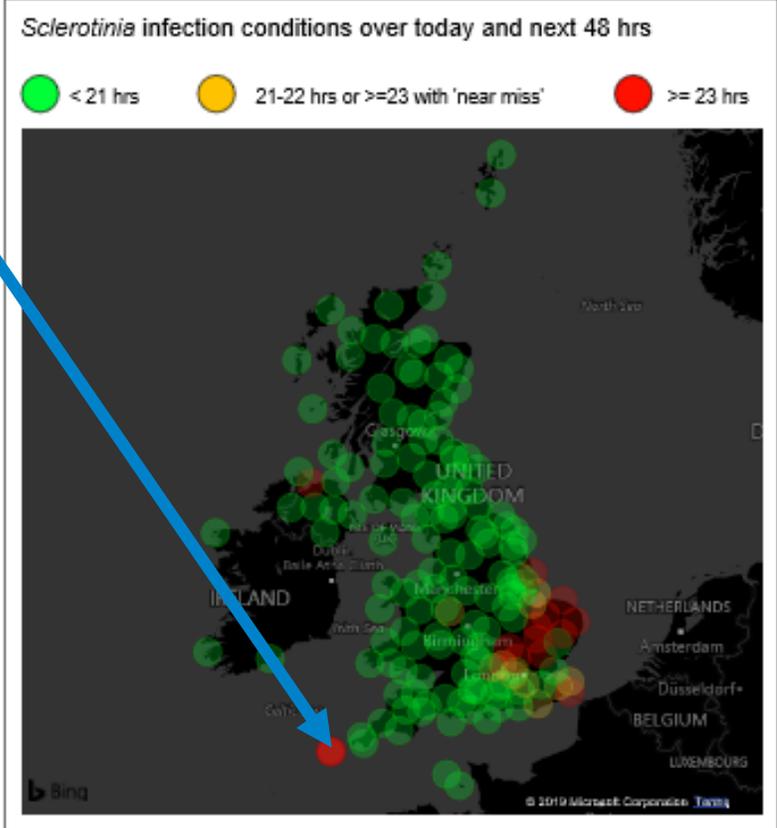


Weather-based forecast

Sclerotinia infection risk alerts

Weather alerts
Spore numbers

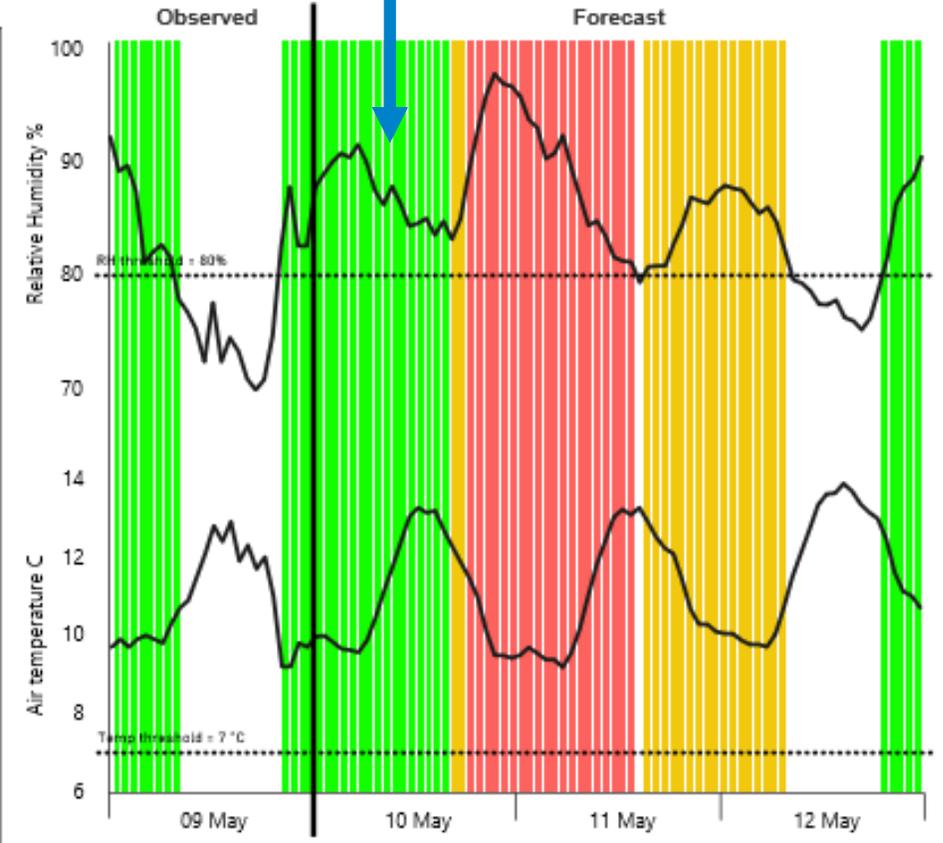
Region:



Select location

Apply protective fungicide before high risk period

This tool is powered by AHDB Weather Hub and uses observed weather data from the MetOffice (DataPoint) and Agrii and forecast data from Iteris ClearAg. Spore trap data is provided by Rothamsted and is co-funded by BAS, additional commentary and interpretation by ADAS.



Design for 2019 – spore trap data

Sclerotinia infection risk alerts

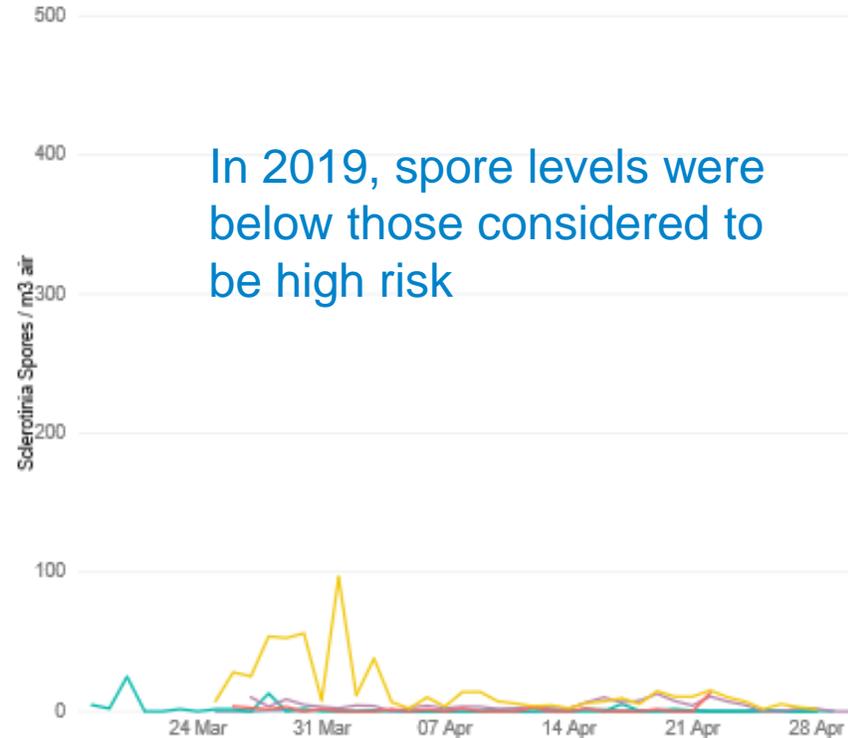
Weather alerts

Spore numbers



This tool is powered by AHDB WeatherHub and uses observed weather data from the MetOffice (DataPoint) and Agrii and forecast data from Iteris ClearAg. Spore trap data is provided by Rothamsted and is co-funded by BASF, additional commentary and interpretation by ADAS.

6 spore trap locations



Phoma forecasting



Phoma forecast

← Benson, Oxfordshire

Site
Benson, Oxfordshire

Prediction date 2018/19
10/6/2018

current date
10/24/2018

Diff
-18

Tag
10% incidence predicted

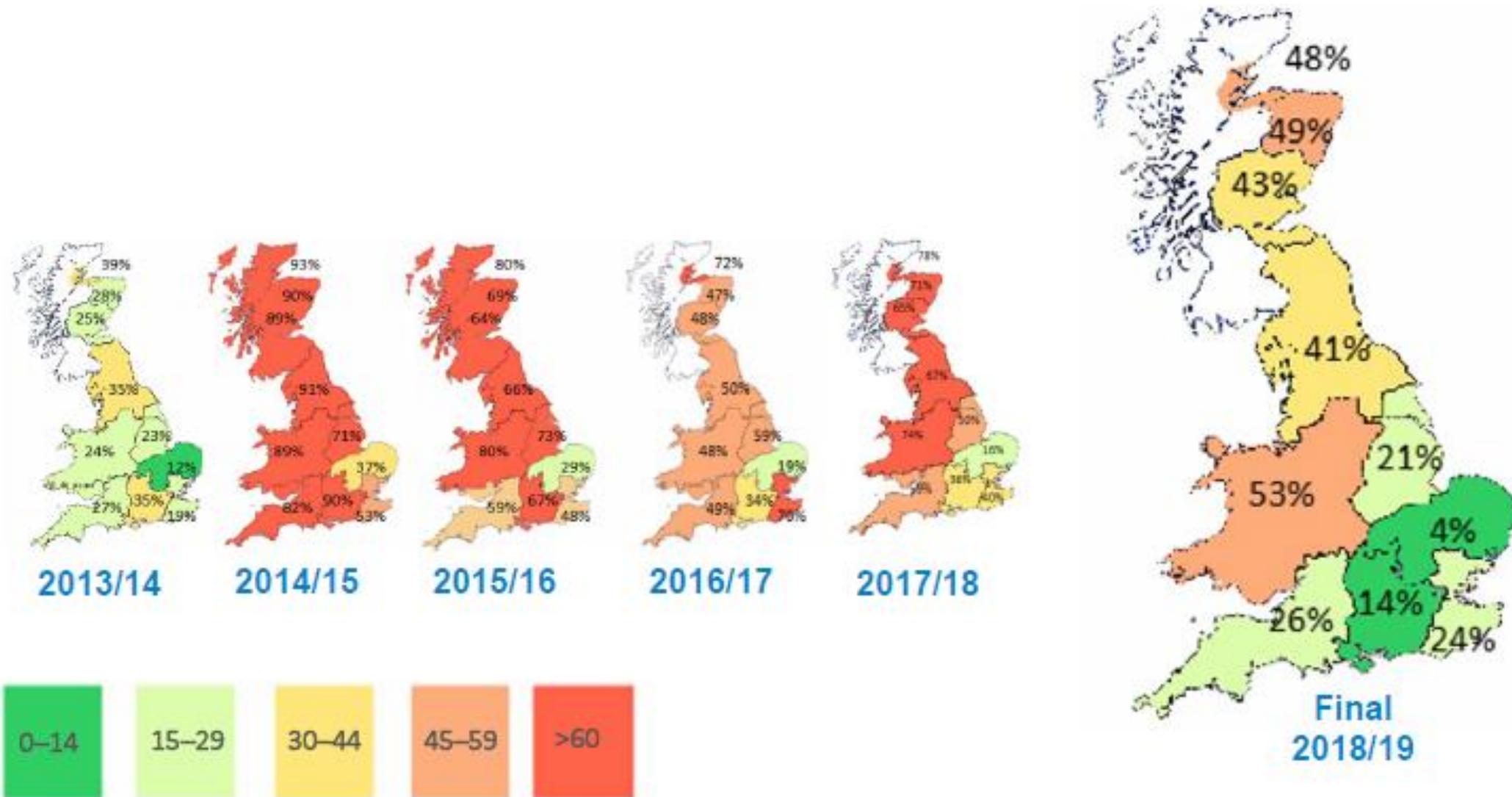


Light leaf spot forecast



(C) CropShots

Light leaf spot forecast



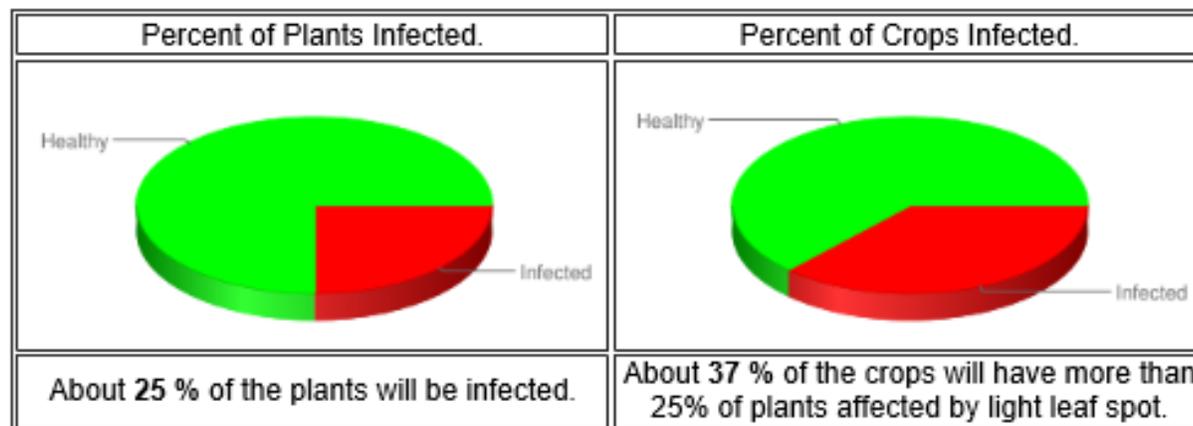
Light leaf spot forecast

Step 4 - Light Leaf Spot Forecast in Winter Oilseed Rape

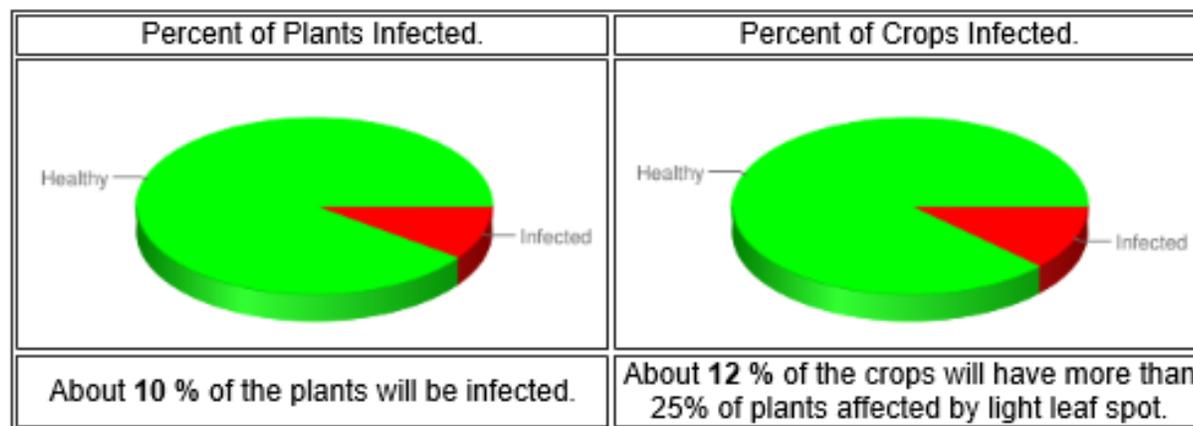
Customized forecast for a farm in Wales and the West of England

Cultivar	Barbados
Resistance Rating	7
Week Sown	21th August - 27th August

If no Autumn fungicide spray applied



If Autumn fungicide spray was applied



Filter varieties by ¹

Calculate Agronomic Merit on X-axis ²

Select regional yield measure on Y-axis ⁴

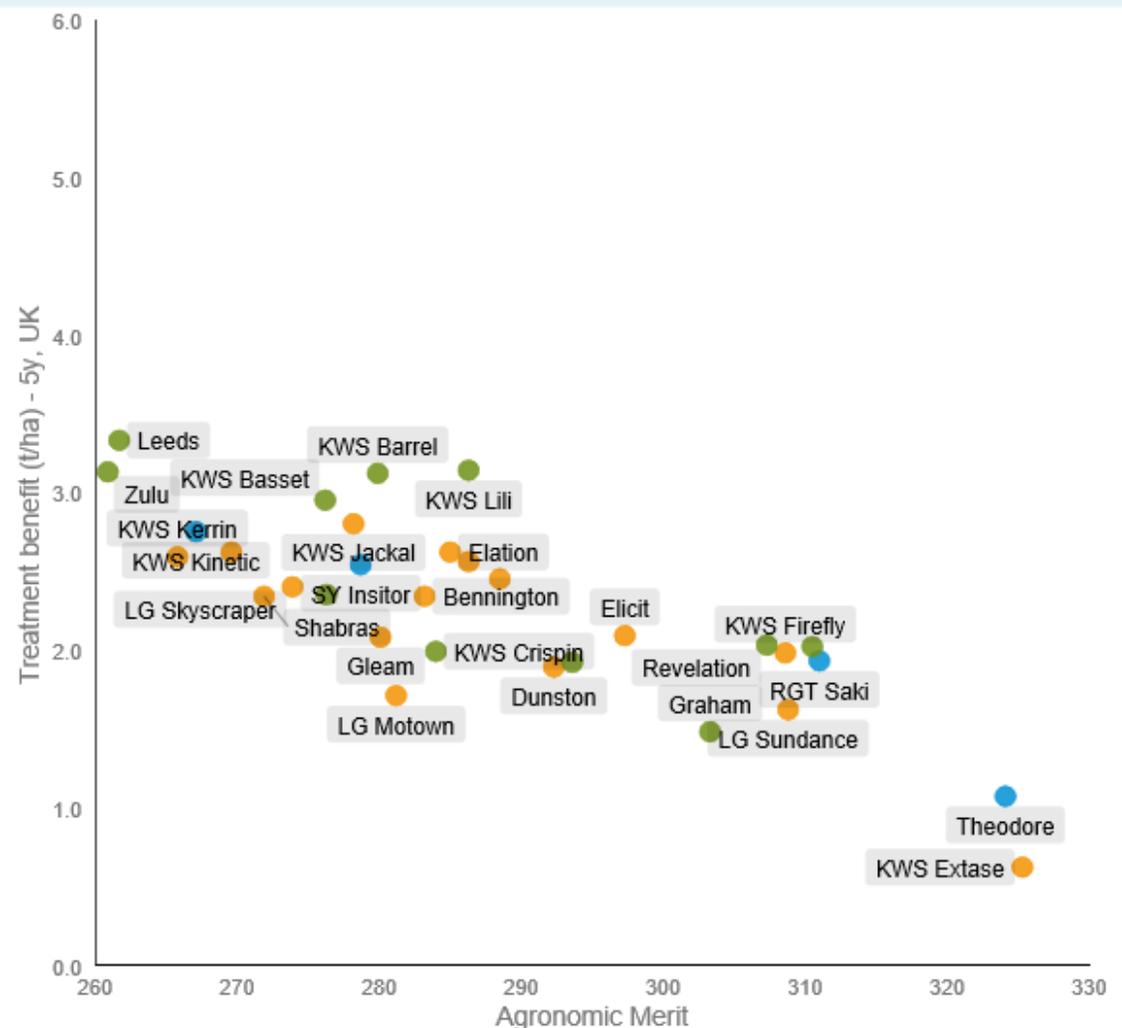
5 year data

- UK (+F)
- East (+F)
- North (+F)
- West (+F)
- UK (-F)
- UK (TB)**
- UK (-F)
- UK (TB)

Last year data

Distinguish variety points in graph by ⁵

- Years on RL ● NEW ● 2-4 ● 5 or more



- End-use group: Multiple selections
- Variety: All
- Septoria tr. rating: 4.3, 8.2
- Yellow rust rating: 4.5, 8.9
- Brown rust rating: 3.6, 8.2
- Mildew rating: 2.8, 8.2
- Fusarium rating: 5.2, 6.9
- Eyespot rating: 3.2, 7.1
- Lodging (+) rating: 6.4, 8.1
- Lodging (-) rating: 6.0, 7.6
- Sprouting rating: 4.0, 7.2
- Yield (early drilled): 91, 109
- Yield (late drilled): 97, 110
- Yield (light soils): 95, 108
- Yield (heavy soils): 96, 105
- Yield (2nd cereal): 95, 104
- HFN: 151, 321
- Specific weight: 73.8, 80.7
- Protein (milling) %: 11.2, 12.9
- UK distilling suitability: All
- Export suitability: All
- Ripening days: All
- Latest safe sowing date: All
- Height (-PGR): 78, 92
- OWBM resistance: All

Clear all filters

<https://ahndb.org.uk/vst>
Variety selection tool

Thank you

Catherine.harries@ahdb.org.uk

 @CatherineGar4



North West Regional Agronomy Event

Soil health, cover crops and cultivations

Anne Bhogal, ADAS



Content

- Soil health – what do we know?
- Assessing soil health
 - Soil health scorecard approach
- Improving soil health
 - Cover crops
 - Tillage
- Summary



Soil – your greatest asset



PROVISIONING:

- Food & fibre
- Raw materials



SOIL HEALTH

“The ability of a soil to act as a living system to sustain, in the long term, its most important functions”



SUPPORTING

- Habitats & biodiversity
- Nutrient cycling
- Platform for infrastructure



CULTURAL

- Archaeology
- Education & recreation

Assessing & managing soil health

- How do we know if a soil is healthy?
- What do we need to measure?
- How do we benchmark/interpret those measures?
- How can we improve soil health?



Soil Biology and Soil Health Partnership Research and Knowledge Exchange 2017-2021



What do we know?

Soils are complex!

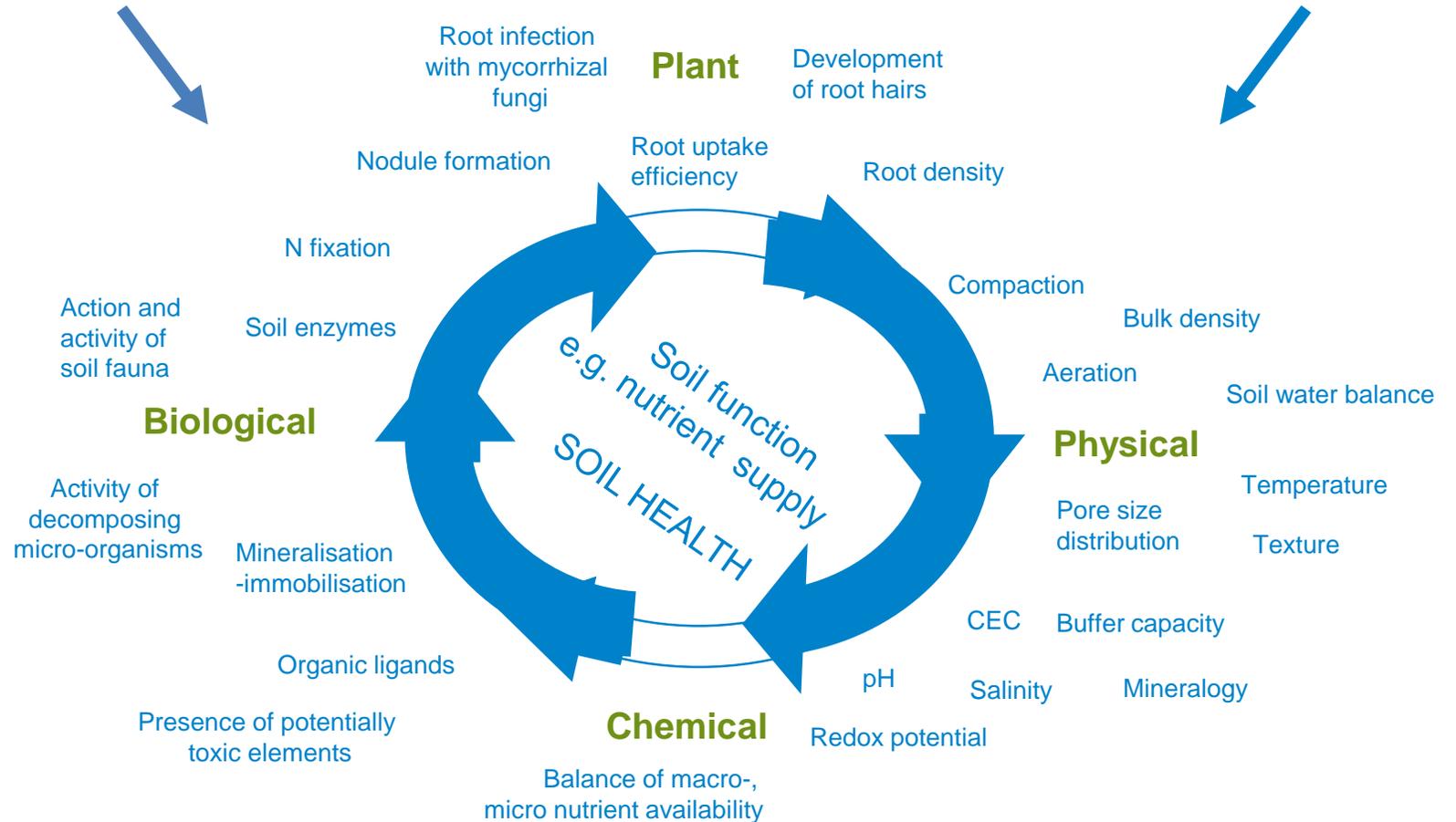


CLIMATE

Temperature, rainfall, evaporation;
where impact is mediated by
both amount and seasonality

NUTRIENT INPUTS

Fertiliser, manure, deposition;
where availability is mediated
by many of the same factors



Key aspects of soil health



Chemical, physical & biological properties:

Inherent e.g. texture, depth, stoniness – ‘*boundaries of the soil habitat*’

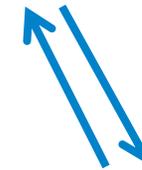
Dynamic e.g. SOM, nutrients, biology – *nature & composition of the habitat*



Physics



Biology



Chemistry



Putting it all together will need a different approach to sample collection – linking physical observation and soil samples sent for testing

Assess on a rotational basis at a similar time & from the same location in the field

Soil health scorecard approach

- A ‘health check for soils’
 - Indicators of chemical, physical & biological condition of agricultural soils
 - Relevant & practical with clear interpretation scheme; use with farmers to guide soil management

Physical (17 ‘candidates’)	Chemical (14 ‘candidates’)	Biological (14 ‘candidates’)
Visual Assessment of Soil Structure (VESS)	pH	Earthworms
Penetration resistance	Routine nutrients	Respiration
Bulk density	Soil organic matter (SOM)	Microbial biomass



Benchmarking & interpretation

Indicators	Benchmarks
pH & routine nutrients (Ext P, K, Mg)	The nutrient management guide-RB209
Visual Soil Assessment of Soil Structure (VESS)	Limiting layer score; SRUC guidance
Soil organic matter (loss on ignition)	Comparison with 'typical levels' for soil & climate

Investigate

Monitor

No action needed

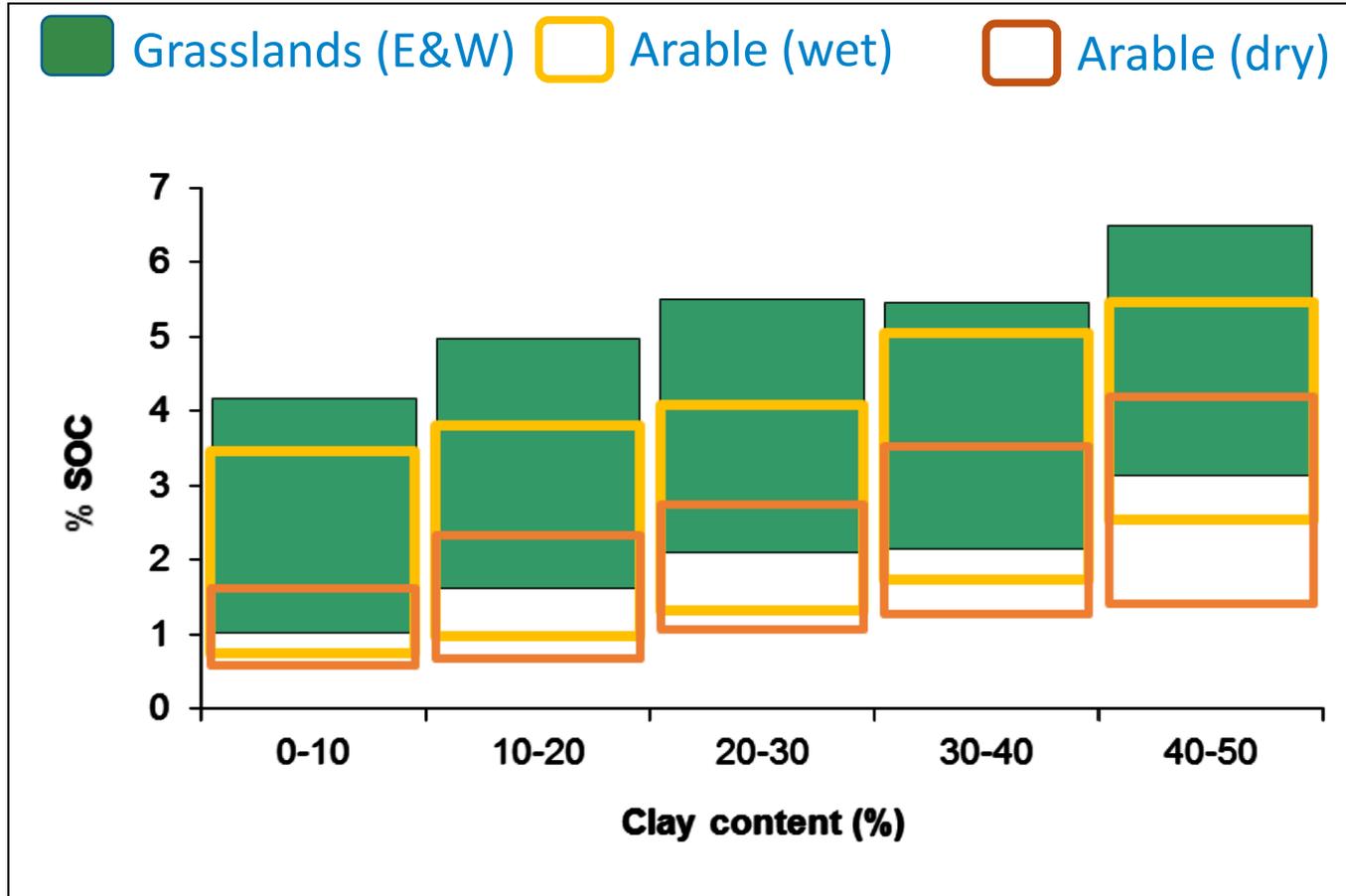
Visual evaluation of soil structure

Structure quality	Size and appearance of aggregates	Visible porosity and Roots	Appearance after break-up: various soils	Appearance after break-up: same soil different tillage	Distinguishing feature	Appearance and description of natural or reduced fragment of ~ 1.5 cm diameter
Sq1 Friable	Mostly < 6 mm after crumbling	Highly porous Roots throughout the soil				 The action of breaking the block is enough to reveal them. Large aggregates are
Sq score		Soil structural quality		Management needs		
1-2		Good		No changes needed		
3		Moderate		Long-term improvements		
4-5		Poor		Short-term improvements		
Sq5 Very compact	Mostly large > 10 cm, very few < 7 cm, angular and non-porous	Very low porosity. Macropores may be present. May contain anaerobic zones. Few roots, if any, and restricted to cracks			Distinct macropores Grey-blue colour	 Aggregate fragments are easy to obtain when soil is wet, although considerable force may be needed. No pores or cracks are visible usually.



'Typical' SOM levels

- There is no easily defined 'critical level' of organic matter below which soil functions become impaired



Simplified to:

- Light < 18% clay; medium 18-35% clay; heavy > 35% clay
- Low, mid & high rainfall regions
- Arable & ley arable; permanent grassland

Investigate

Monitor

No action needed

Very low for climate & soil type

Below average

≥ average

Evaluation & development

Long term experimental sites (7):

- Selected to explore the key drivers of biological functioning
- Provide a test bed for the scorecard & evaluation of new indicators

Farmer groups (8):

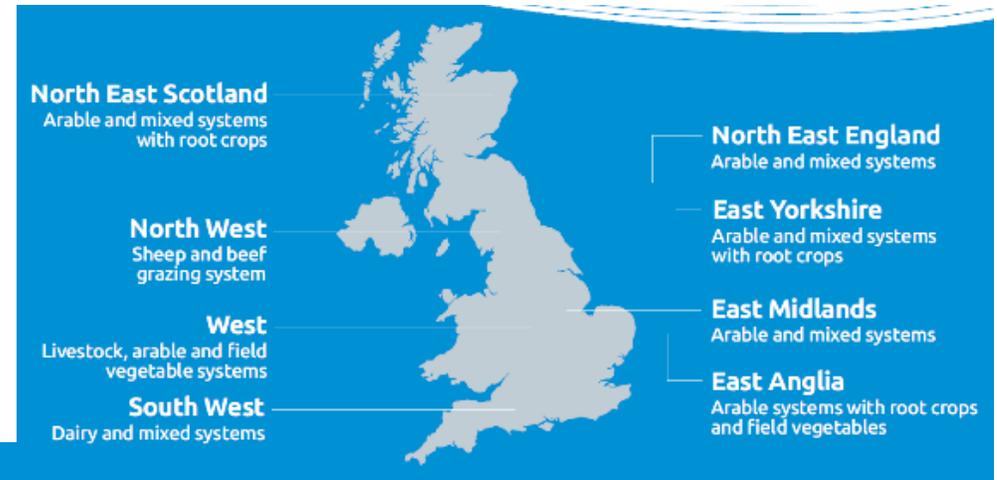
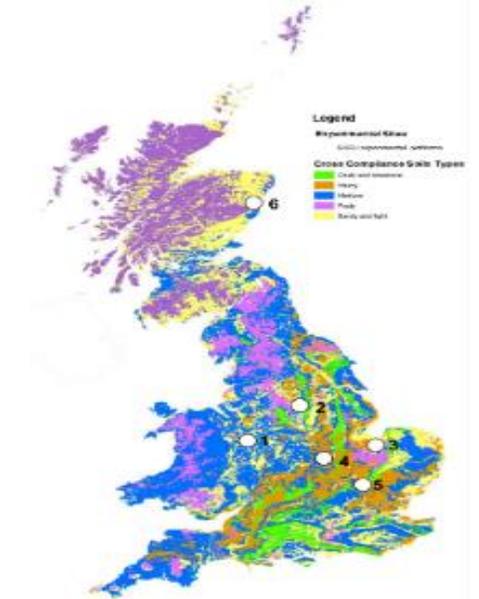
- Review & test the scorecard on farm
- Extend the range of practices evaluated

AHDB Strategic & Monitor Farms



FARM EXCELLENCE STRATEGY

Learn more about the thinking behind our Farm Excellence project



Long-term experimental sites

Harper Adams:

Repeated organic material additions (est. 1993)
Sampled October 2017

Attribute	Control	FYM (23yrs)	Slurry (23 yrs)	Green compost (13 yrs)
SOM (%LOI)	3.0	4.1	3.6	4.0
pH	6.4	7.0	6.4	7.0
Ext. P (mg/l)	56	73	53	60
Ext. K (mg/l)	80	311	194	187
Ext. Mg (mg/l)	44	87	75	63
VESS score	2	2	2	1
Earthworms (No./pit)	11	13	9	11

Craibstone:

Constrasting pH levels (est. 1961)
Sampled October 2018

Attribute	pH 4.5	pH 6.0	pH 6.5	pH 7.5
pH	4.9	6.1	6.6	7.5
SOM (%LOI)	10.3	10.1	10.3	10.3
VESS score	2	1	2	1
Microbial biomass (mg/kg)	98	157	231	163
Respiration (CO ₂ -C mg/kg)	99	124	140	101
Earthworms (No./pit)	1	5	5	6



Investigate



Monitor



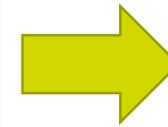
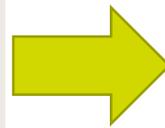
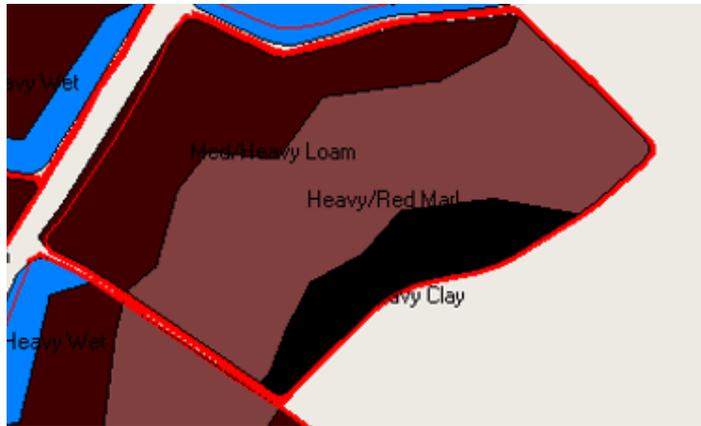
No action needed

Note: benchmarks are subject to review

Assessing baseline soil health at Strategic Farm West (Squab Hall farm)



- Using the scorecard to benchmark soil health at the outset and track changes over time



Field 25: Rob's soil map

Field 25: Sampling zones:
1. 'heavy red'
2. 'Medium/heavy loam'
3. 'heavy clay'

Soil sample & physical evaluation

Scorecard for field 25

10.5ha; Spring barley @ harvest 2019



Zone	1	2	3
% clay	37	43	51
SOM (%LOI)	5.0	4.7	4.4
pH	7.5	8.1	8.1
Ext. P (mg/l)	18	13	21
Ext. K (mg/l)	344	375	433
Ext. Mg (mg/l)	849	708	675
VESS score (limiting layer)	3	4	4
Bulk density (g/cm ³)	1.17	1.26	1.28
Earthworms (No./pit)	6	1	2

Investigate
Monitor
No action needed

Note: benchmarks are subject to review

Key issues (field 25): soil structure & earthworm numbers (particularly zones 2 & 3 – heavier textures & below average SOM)

Key issues for Squab Hall Farm

- Soil structure and earthworm numbers identified as key issues across the farm



Sq 2 'intact'



Sq 4: 'Compact'

Key to managing soil health

Biological

- Feed the soil regularly through plants and OM inputs
- Move soil only when you have to
- Diversify plants in space and time

KNOW YOUR SOILS

principles to improve soil health

Chemical

- Maintain optimum pH
- Provide plant nutrients – right amounts in the right place at the right time
- Know your textures and minerals – buffering capacity, free supply!

Physical

- Know your textures and understand limits to workability, trafficability
- Optimise water balance through drainage if necessary
- Improve soil structure, minimise compaction – effective continuous pore space



Soil improving practices:

- Organic materials
- Grass leys
- Cover crops & diverse rotations
- Reduce tillage

Also....

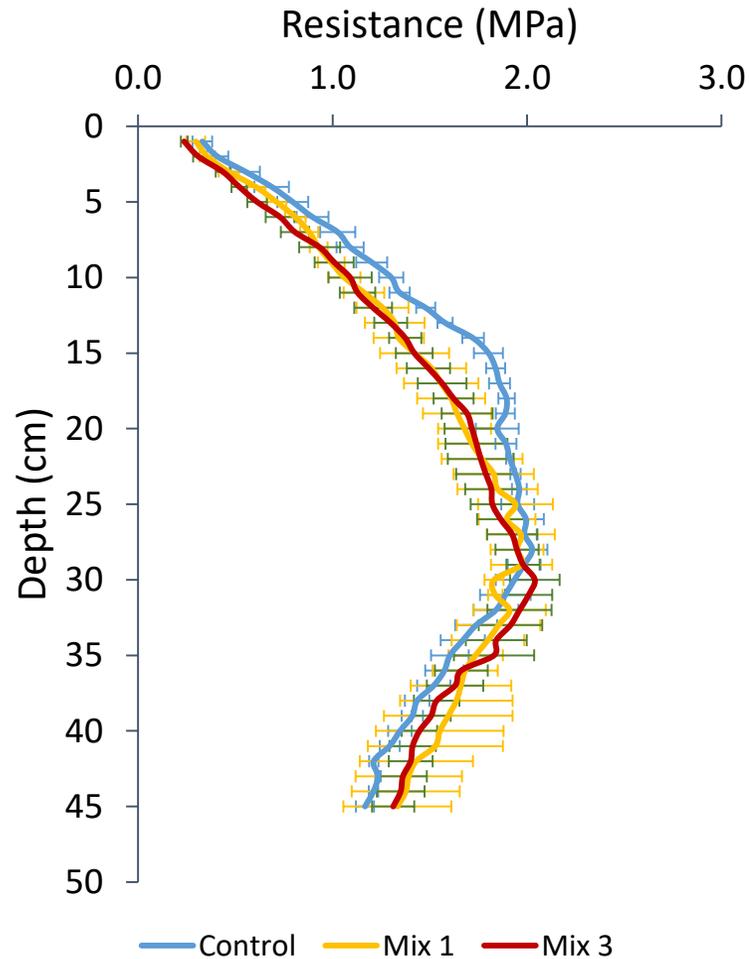
- Appropriate operations – timing & type
- Drainage

Cover Crops – Why?

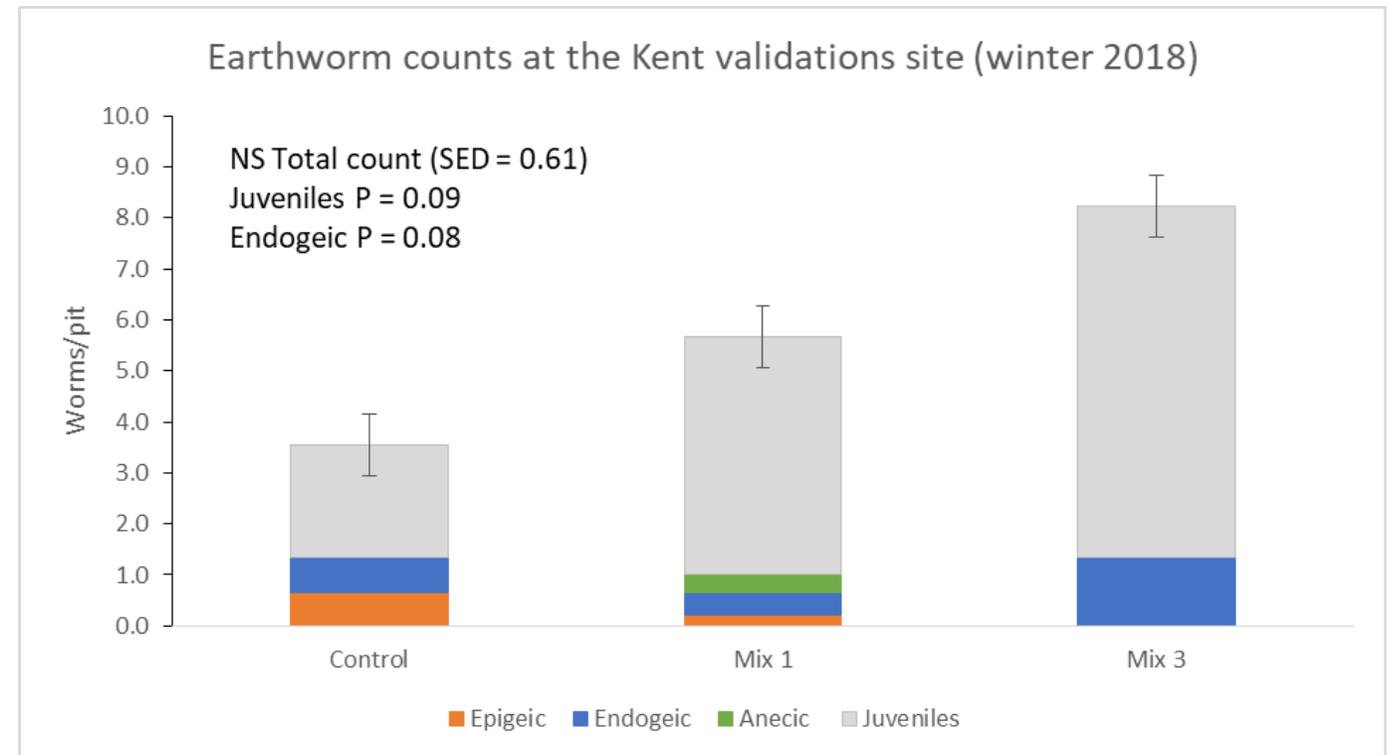
- Reduce erosion, run-off & nitrate leaching
 - Retain N (& P) improve soil fertility
- Potential benefits for soil structure, water holding capacity & porosity
 - rooting & fresh organic matter
- Weed management, disrupt pest & disease cycles
- Biodiversity & habitat provision
 - Greening measures
- Grazing & forage



Cover cropping can improve soil structure & biological activity



Earthworm counts, post cover cropping



Penetrometer resistance, post cover cropping

Mix 1: Oats (83%) & Clover;

Mix 3: Spring oats (53%), Crimson clover (11%) Oil radish (11%) Phacelia (7%), buckwheat (19%)

But to be of benefit you need to consider:

- Cover crop species – straight or mix?
 - What do I want to achieve
 - What fits with my rotation
 - Cost

- Establishment?
- Management ?
- Destruction?



Maxi Cover Crop Project

Maximising the benefits from cover crops through species selection and crop management

After the AHDB review on cover crops 2016 – No. 90

Objectives:

- Quantify effects of different cover crops on soil properties, crop rooting & yield
- Validate effects of cover crops and establishment on monitor farms



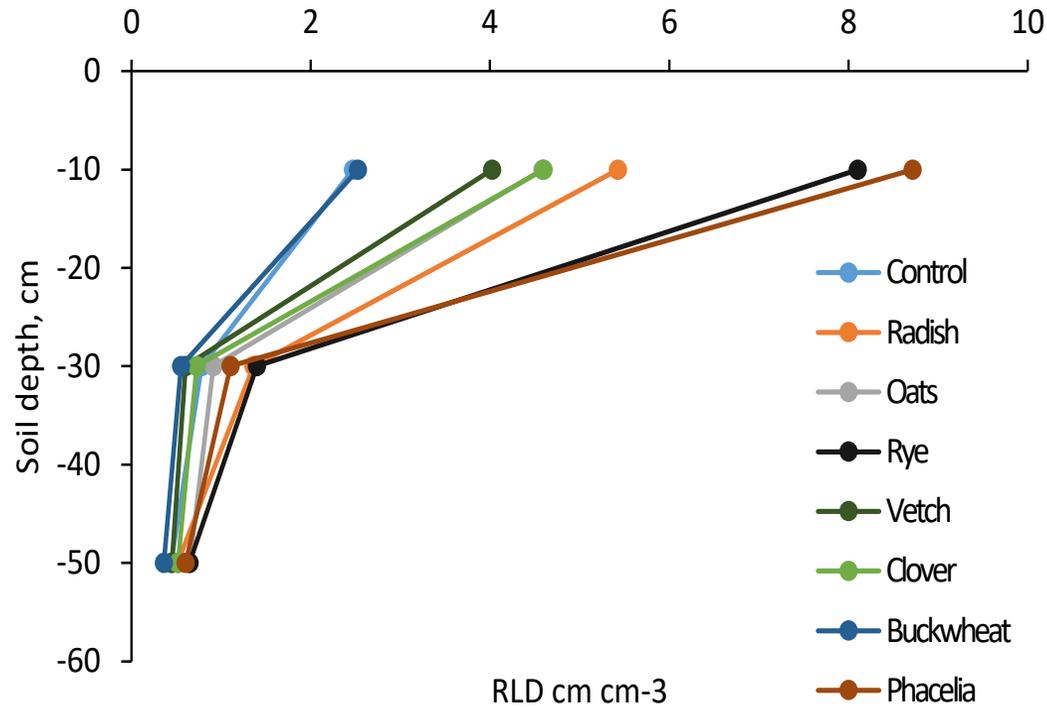
Cover crop choice



Cover crop	Sowing (autumn)	Qualities	Considerations
Brassicas			
Radish & Mustard	Mid Aug – early Sept	Good root system, biofumigation potential, nutrient uptake	Rotational conflicts OSR
Cereals			
Oats & Rye	Mid Aug – mid Sept	Rapid early growth and cover, deep rooting	Rotational conflicts cereals
Legumes			
Clover & Vetch	June-August	N fixing, fibrous root system	Rotational conflicts peas & beans;
Other			
Phacelia	Mid Aug – mid Sept	No rotational conflicts, good root system and nutrient uptake	Not entirely frost tolerant; needs soil moisture

Cover crop rooting

Treatment: $F < 0.001$, SED 0.41
 Depth: $F < 0.001$, SED 0.21
 T*D: $F < 0.001$, SED 0.70



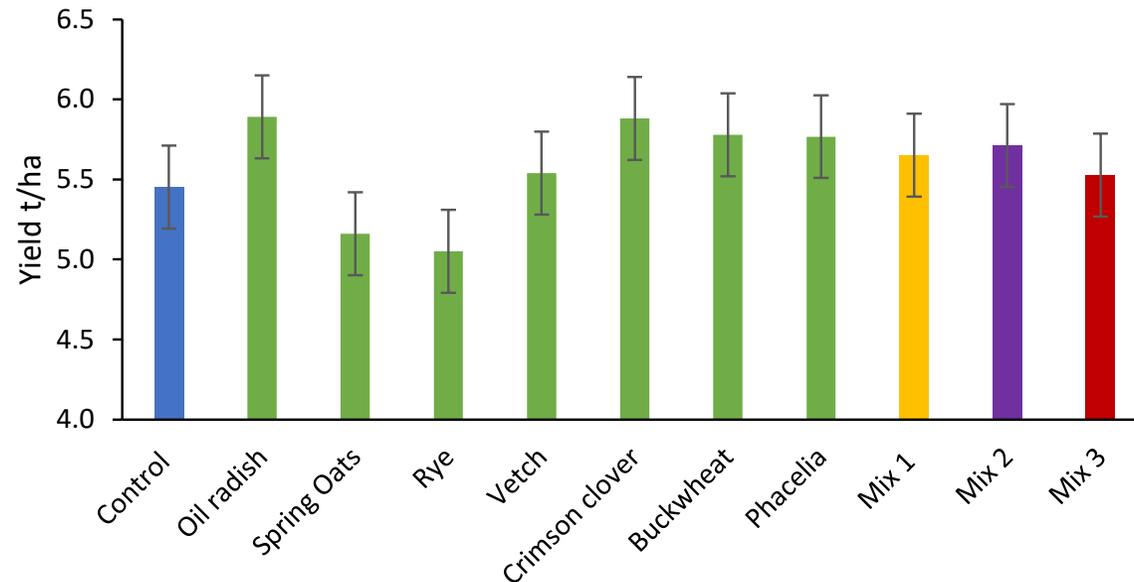
Phacelia and Rye had greatest Root length density (RLD)

N.B. Doesn't include the radish tap root, due to nature of sampling

Rotational conflicts

Existing cropping	Avoid the following as a cover crop
Cereals in rotation	Oats, Rye or Ryegrass
Oilseed rape in rotation	Mustards or Radish
Pulses and legumes	Legumes e.g Vetch or clovers

Spring Barley Yield



Timings are critical - establishment

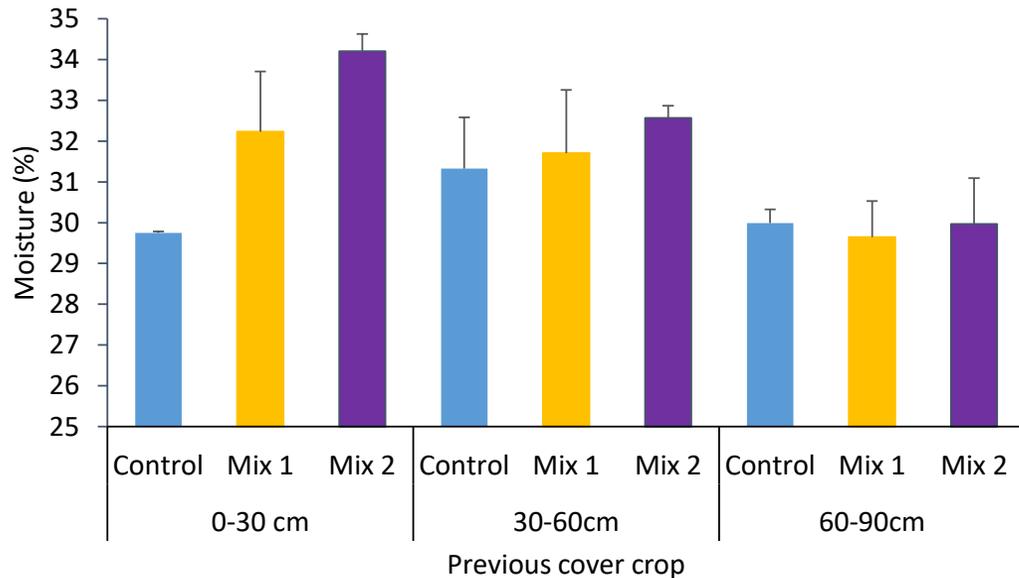
- Early establishment... maximise the benefit



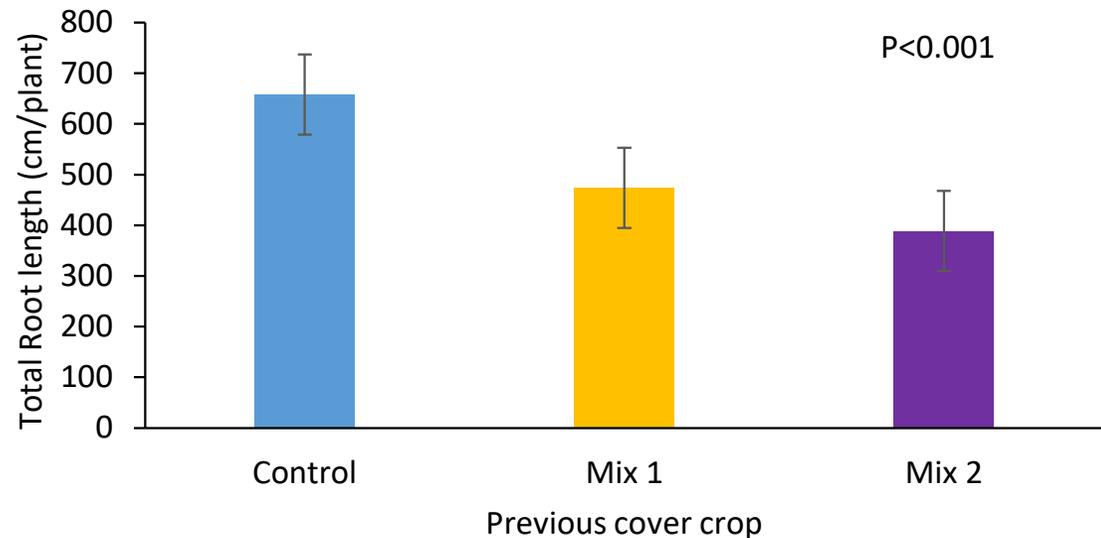
Timings are critical - destruction

- Destroy early – particularly on clay soils in wet seasons!

Soil moisture content, Yorkshire April 2017



Spring bean root length @ Yorkshire (May 2017)

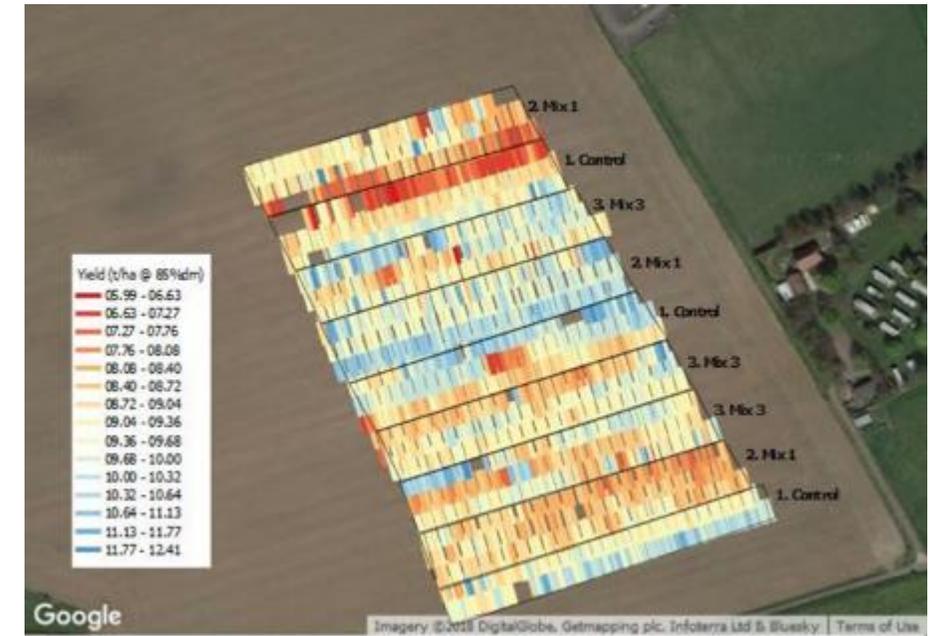


0.2-0.4 t/ha yield decline

Mix 1: Oats (83%) & Clover; Mix 2: Oil radish (30%) Phacelia (20%), buckwheat

Impacts on yields are variable

Site:	Kent	Yorks.	Hunts.
Crop:	Barley	Beans	Barley
Season	2017	2017	2018
Yields (t/ha):			
No cover	9.4	3.5	7.1
Mix 1	+ 0.1	- 0.4*	No change
Mix 2		- 0.2	
Mix 3	+ 0.4		0.1



* $P < 0.05$ (compared to the control treatment)

Needs to be a long-term investment

Tillage

Purpose of cultivations	Problems with cultivation
Crop establishment & rooting	Compaction
Weed, disease & pest control	Lower (surface) organic matter levels
Incorporation of residues, manures etc	Lower soil biology (earthworms, fungi)
Drainage/aeration	
Compaction alleviation	



Plough-based



Reduced/minimum tillage



Direct drilling/no till

Only move soil when/if you have to, and....
.....only when conditions are fit

Effect of tillage on soil organic matter levels

Reducing tillage intensity = ↓ Disturbance ↑ inputs (but may be just confined to the topsoil)

Potential increase in SOM following zero tillage compared with conventional tillage (95% CI in brackets)

Cultivation practice	SOM increase (kg OM/ha/yr)	% of SOM stocks ^a
Zero tillage	540 (-240-1300)	0.35
Reduced tillage ^b	270	0.18

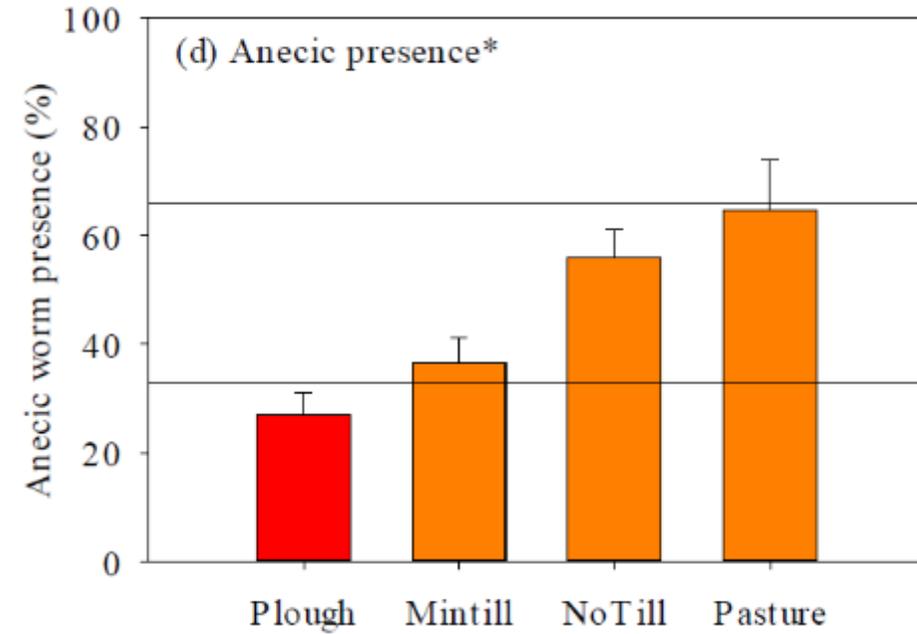
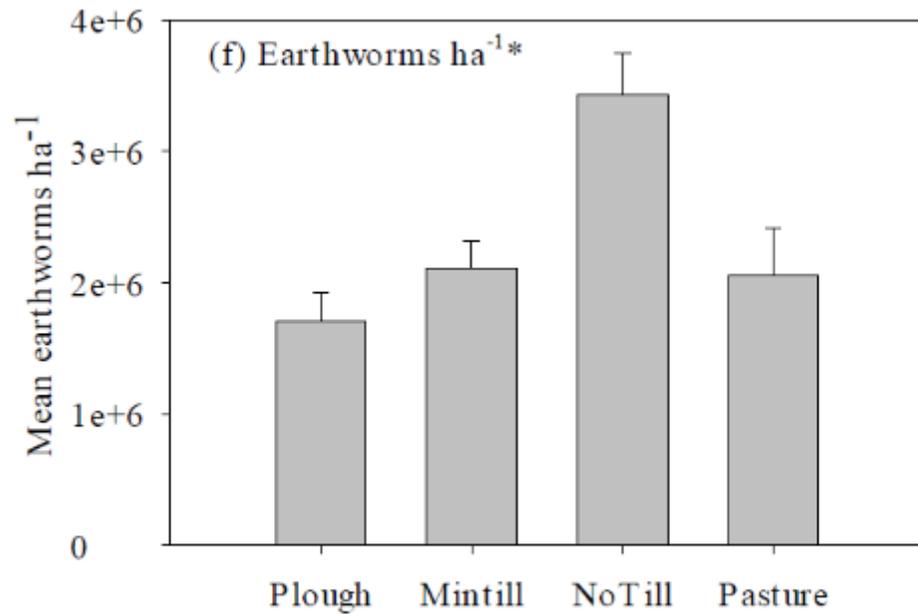
^aAssuming 4.8% SOM in top 25cm (Webb et al., 2001) & a bulk density of 1.3 g/cm³ = 157 tOM/ha

^bAssumed to be half the C storage of zero tillage on the basis of depth of soil disturbance

Database: 6 UK experiments over timescale of 2-23 years; Bhogal et al. (2008)

Effect of tillage on earthworms

#60min survey results 2018 (Stroud., 2018)

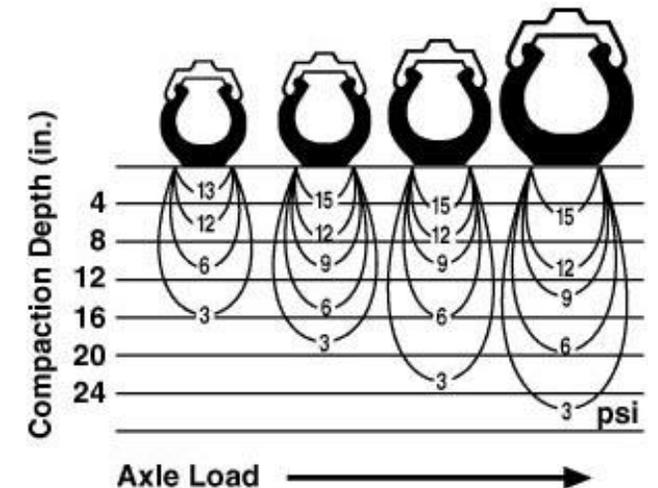
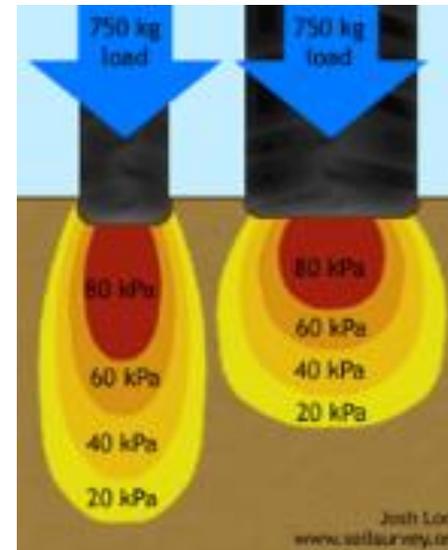


Managing soil compaction.....

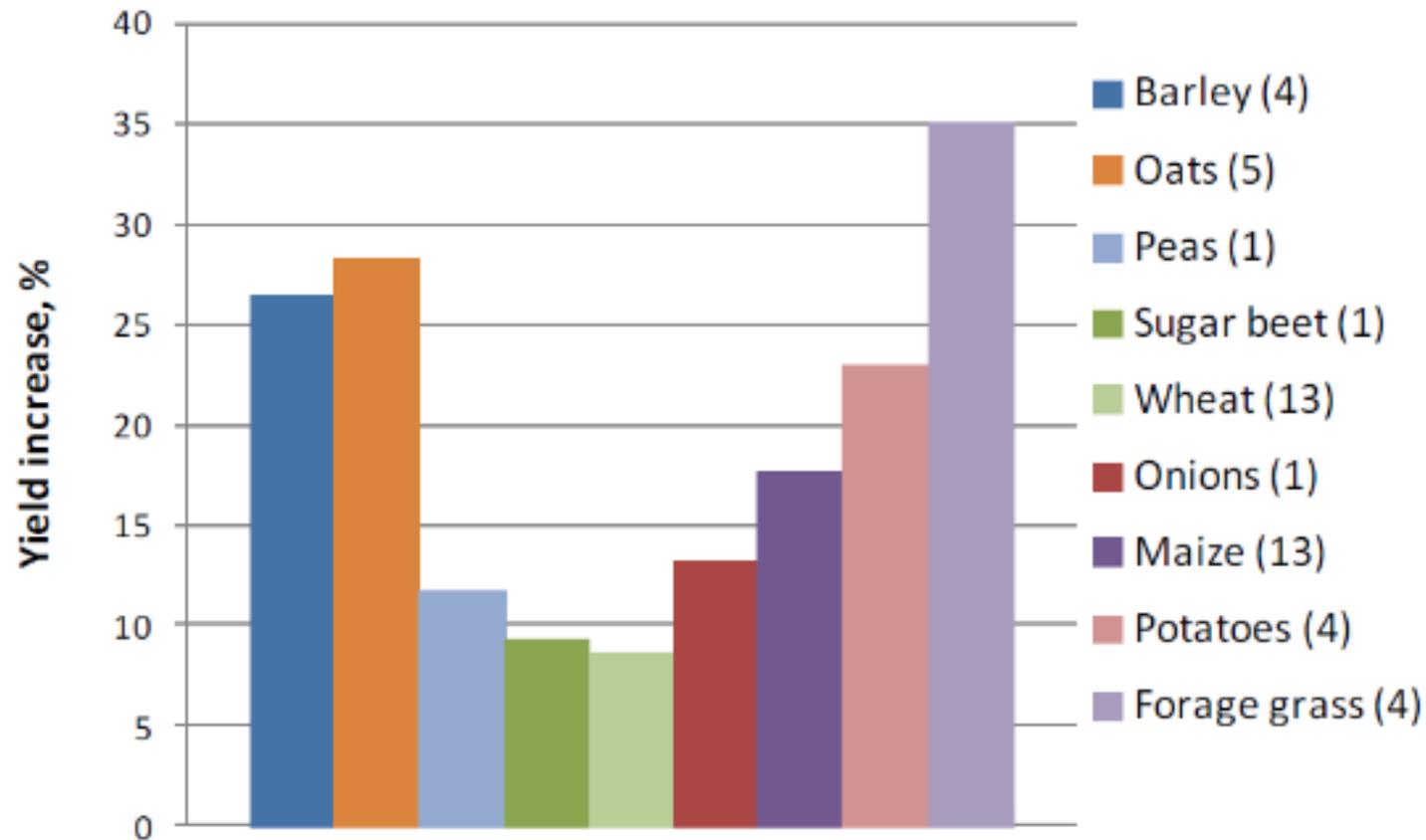
....Avoidance or alleviation

Avoiding soil compaction

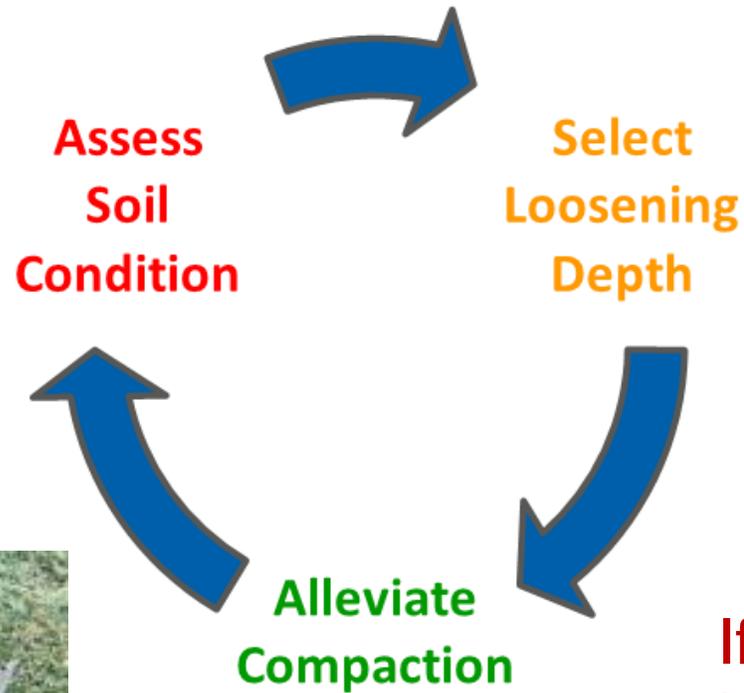
- Avoid working the soil when wet
- Low ground pressure tyres
- Rotation/crop choice
- Enhance SOM levels to build resilience
- Reduce the trafficked area
- Controlled traffic farming (CTF)



Impact of reduced traffic on crop yields

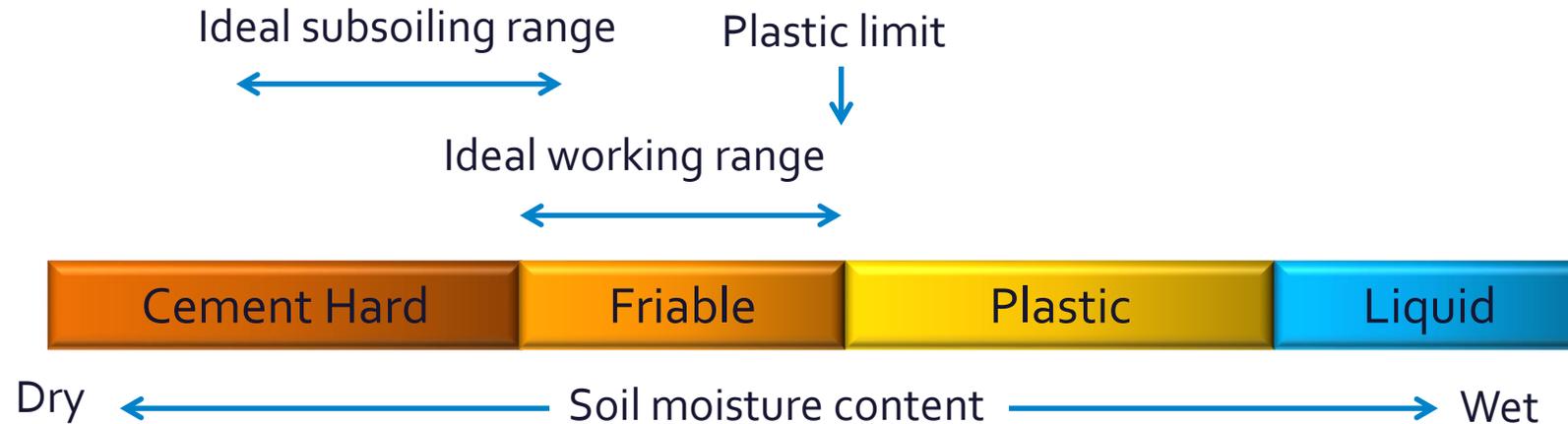


Compaction alleviation



If a specific compaction issue has not been identified you are probably better off doing nothing!...

Soil physical state (consistency)



Plastic limit:

- Soil can be rolled/moulded into a ring without cracking/crumbling
- Unable to reform after compression from machinery/cultivation (moisture and air is expelled) and so compaction/panning can result
- Avoid cultivating/travelling on soil to prevent compaction and poor crop development

Summary – Soil health

- Assessment of soil health requires an integrated approach linking chemistry, physics and biology
- To evaluate impact of management practices, track changes over time by assessing on a rotational basis & from same location/timing.
- A scorecard approach is being developed & evaluated which aims to provide benchmark



Summary – Cover crops & tillage

- Cover crops are excellent at providing nitrogen uptake, erosion control, and soil structural benefits
- Considerations:
 - Species choice – what do you want to achieve & does it fit with your rotation?
 - Drill as early as possible
 - Leave a good window between destruction and spring crop establishment
 - Be prepared for variable yield impacts – needs to be a long-term investment
- Only move soil if and when you have to & only when conditions are fit

North West Regional Agronomy Event

Refreshment break



North West Regional Agronomy Event

Clean air strategy

Sajjad Awan, AHDB



Presentation Summary

- **Introduction to Clean Air Strategy 2019**
- **25 year environment plan**
- **Meeting key targets for agriculture**
 - **Reduction in ammonia emissions**
- **An update on RB209-New edition**

Why to focus on environment?

- Environment will be the cornerstone of agricultural policy in England
- Delivery of clean air, water and habitat through Environment Land Management Schemes (ELMs)
- Direct payment schemes to be replaced by ELMs
- Capital grants for land managers to improve sustainability and reduce negative environmental impacts





HM Government

A Green Future: Our 25 Year Plan to Improve the Environment



25 Year Environment Plan

Sustainable growth

Improve resource use efficiency

- (soil, water and air)

Improve environment & economy

- Working with farmers to use fertilisers efficiently

Provide clean air and water

1. Sustainable Growth for future generations



2. Improve resource use efficiency

Soil



Improve Soil Health

Water



Aquatic life/drinking water

Nutrients



Nutrient use efficiency

3. Clean Air and Water

POLLUTANTS THAT AFFECT AIR QUALITY

*percentage of total NH_3 emissions (2016) source: NAEI 2018

Ammonia (NH_3)

SOURCES

Agriculture
(includes anaerobic digestion)



IMPACTS



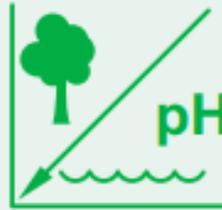
Ammonia reacts in the atmosphere to produce particulate matter (PM) which has significant health impacts including:

cardiovascular and respiratory disease

ammonia emissions can travel long distances and combine with urban NO_x contributing to smog

The effects of ammonium deposition

acidification of habitats



excessive nitrogen in habitats



reducing biodiversity



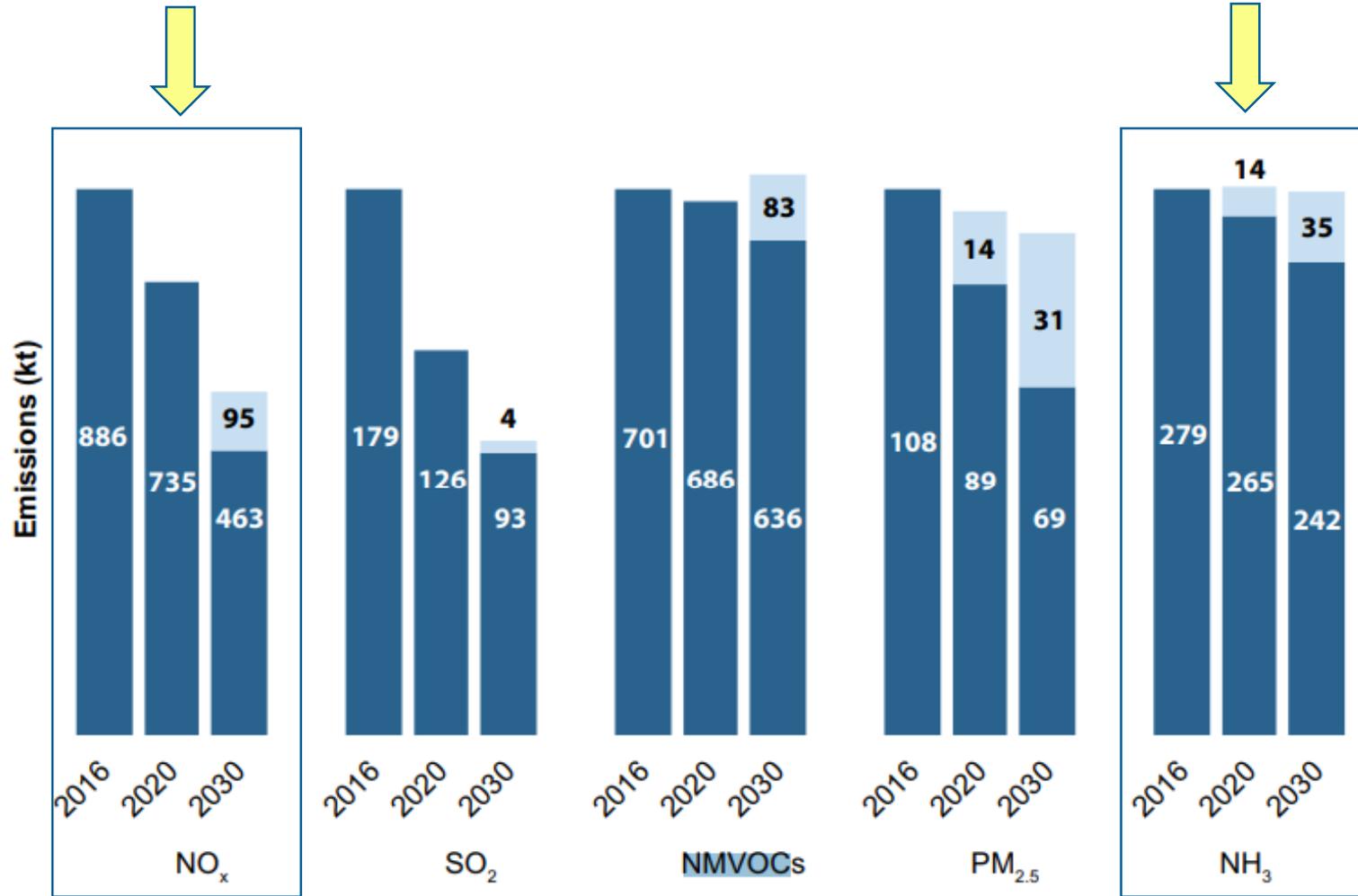
Original design by Defra Digital Comms

3. Clean Air and Water

- **Methane from livestock:**
 - **51% methane from agric.**
 - **14% NMVOC (Non-methane volatile organic compounds)**
 - **Both create ozone, harmful for humans/habitats**
 - **Ozone on average reduces yield by 5% in Cereals & oilseeds**



Emissions of key pollutants



Dark blue = Ceiling
Light blue = Above ceiling

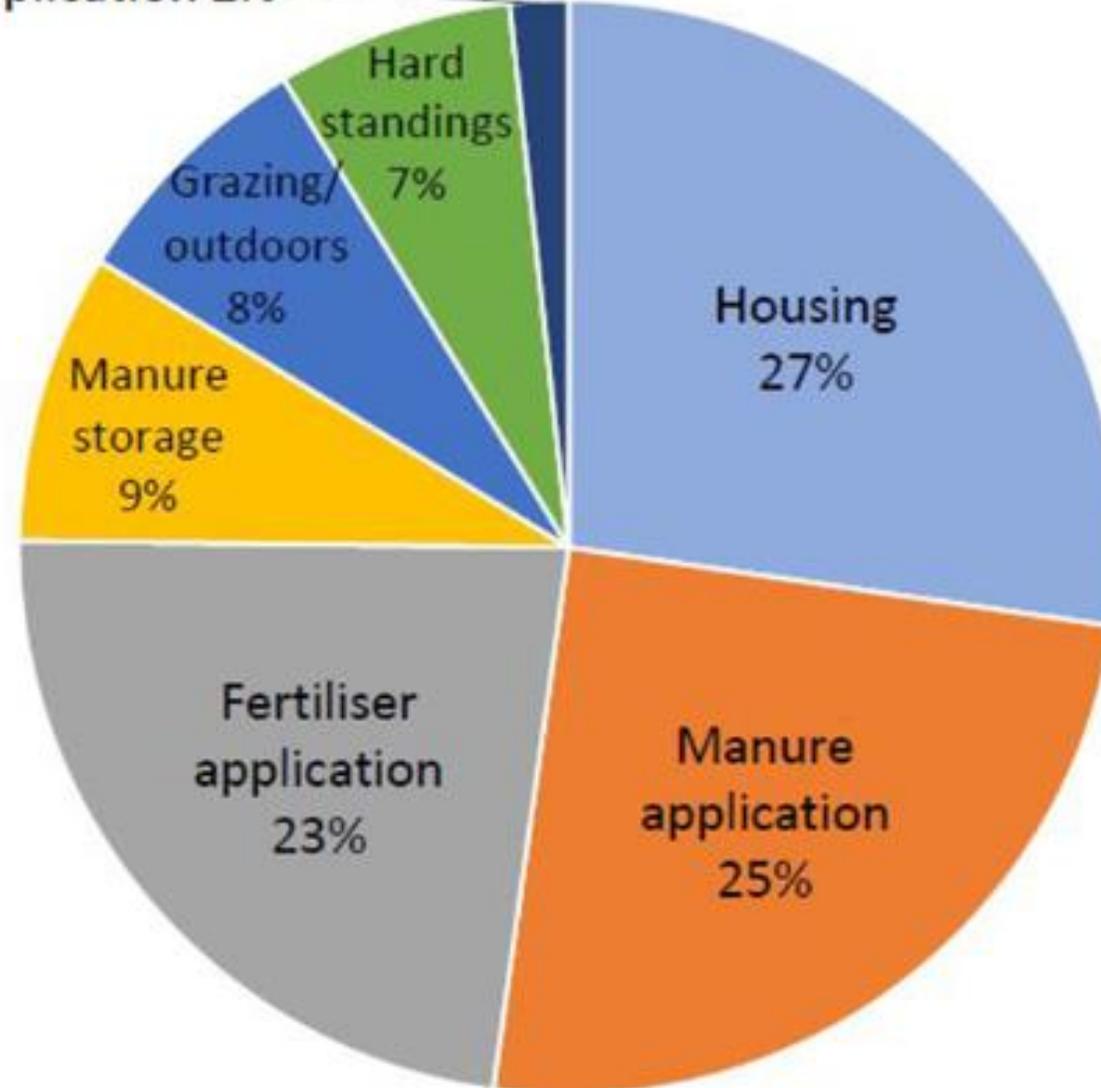
Not much reduction
in ammonia emission

Nitrous oxide

Ammonia

Ammonia emissions (2016): Management Category

Sewage sludge application 2%



Reduction of ammonia emissions from farming

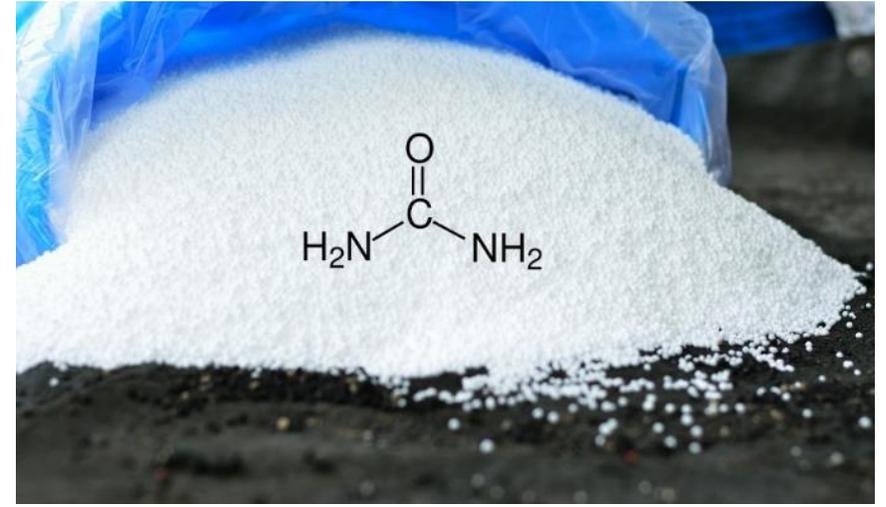
Introduce rules on specific emissions

- Reduce emissions from urea-based fertilisers (ASAP)
- Solid manure/digestate spread to bare land- incorporate within 12 hours, except no-till land (ASAP)



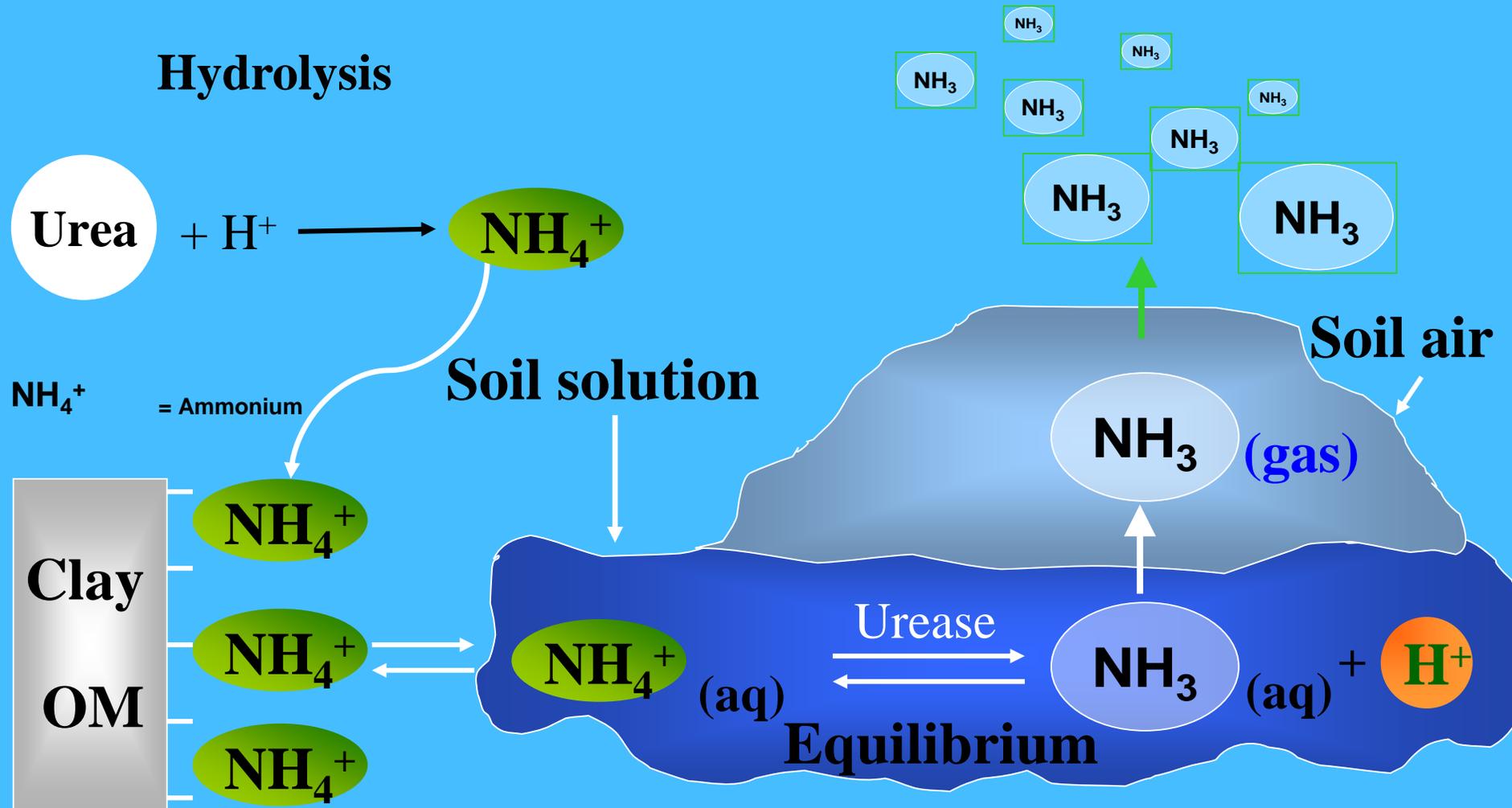
Urea fertiliser

- Approximately 22% of N used as urea
- Concentrated N (46%)
- Easy to store and use
- Cheaper than other N sources
- Environment losses are higher compared to ammonium nitrate



Credit: Tim Scirvener

Urea volatilisation

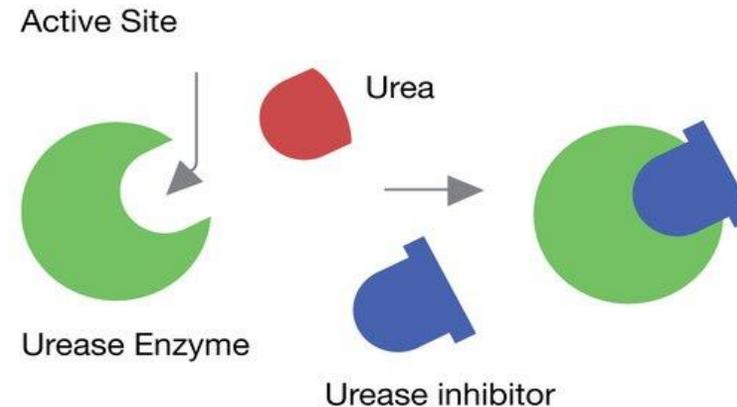


Urease Inhibitors

- Urease produced by plants and microbes in the soil

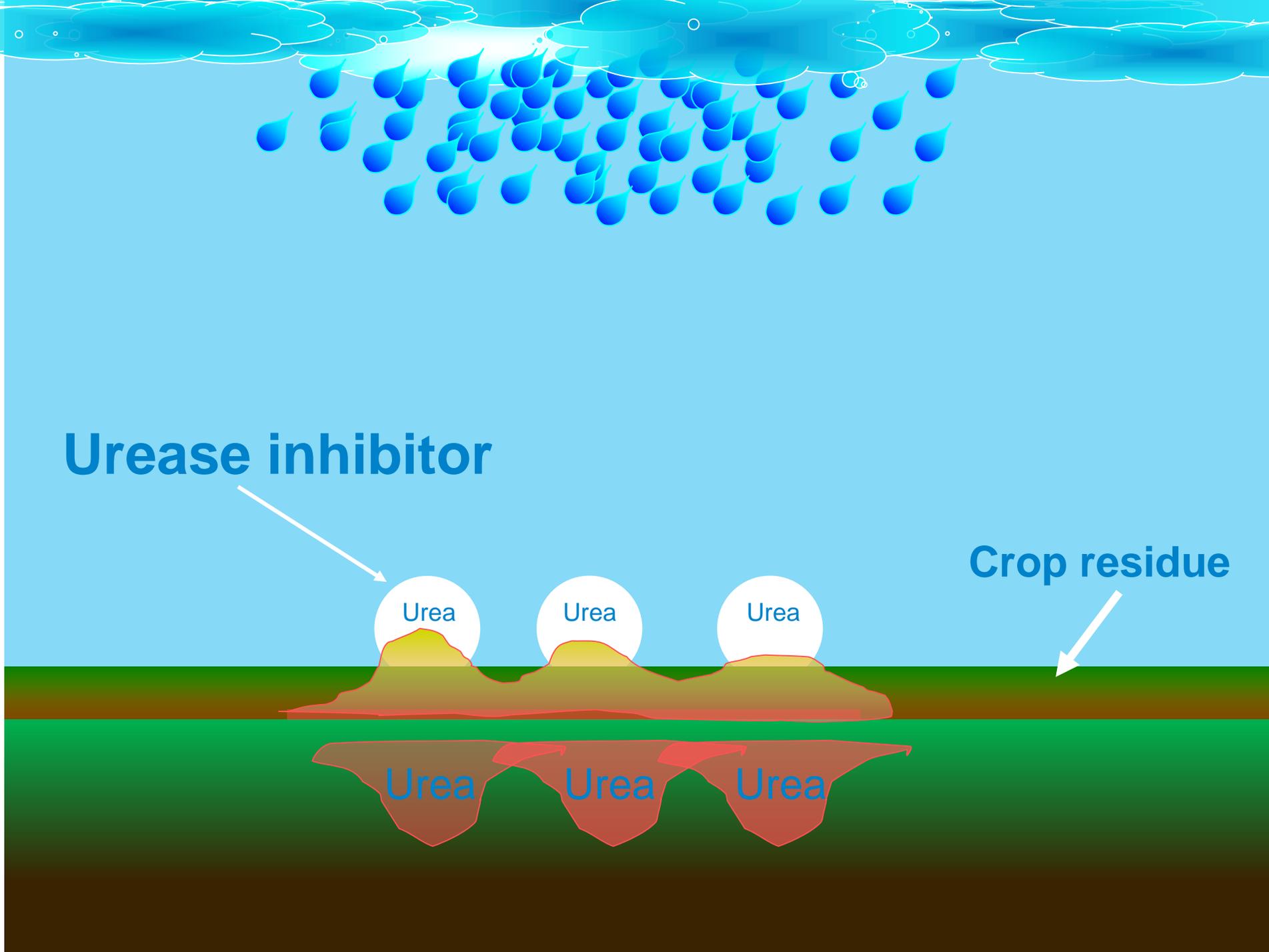


- Urease Inhibitors slow down the conversion of Ammonium to Ammonia



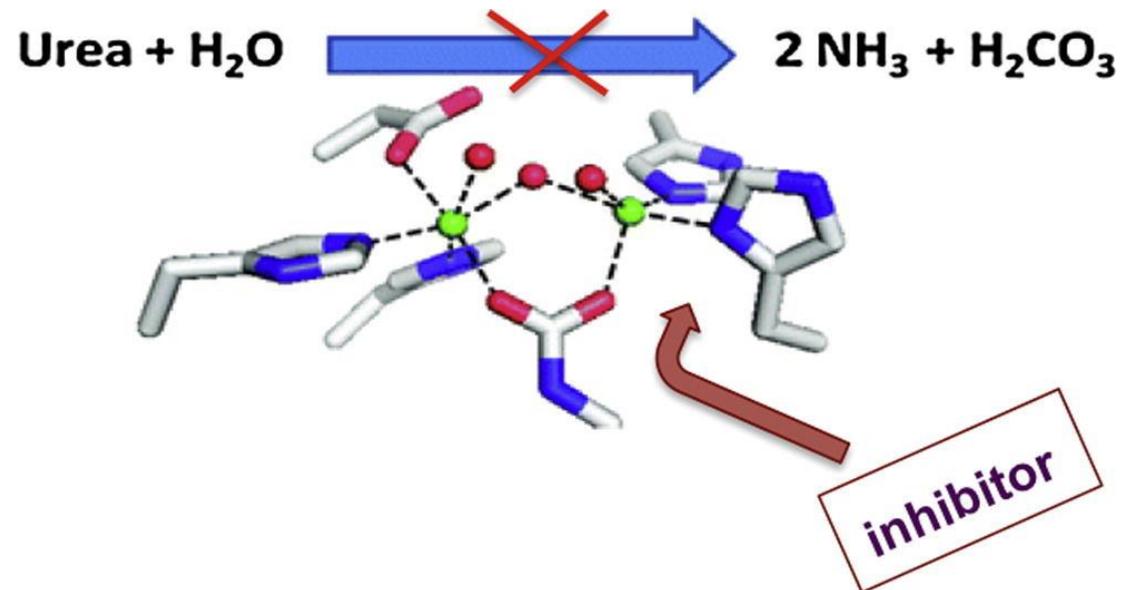
Urease inhibitor

Crop residue



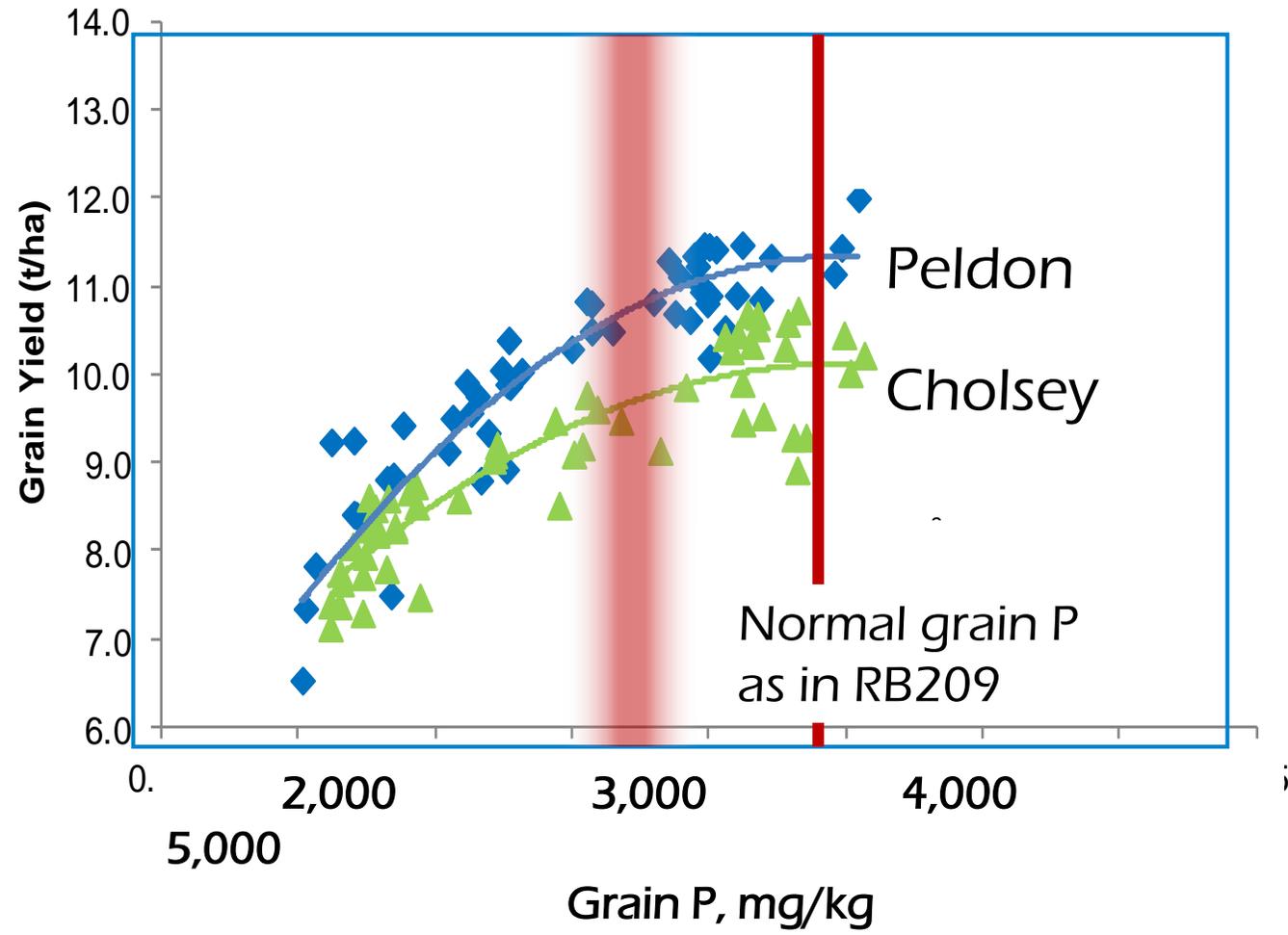
Urease Inhibitors

- **Phosphoramidate compounds are extremely potent inhibitors**
 - NBPT (n-butyl thiophosphoric triamide) marketed as **Agrotain**
 - Phenyl phosphorodiamidate (PPDA) is also a strong UI
 - 2-NPT (2-nitrophenyl) phosphoric triamide is a mixture of NBPT and NPPT
- Heavy metals
- Nutrisphere™



Updates on RB209

Cost Effective Phosphorus use



Olsen-P and grain-P tests, better indicators of soil P availability
 Recommendation to test grain and soil

Sulphur for optimum yield and proteins



High sulphur deficiency in lighter soils with high rainfall

Thanks for your attention!

Questions

For further queries contact;

Sajjad.Awan@ahdb.org.uk

02476 47 8787

07815505800

North West Regional Agronomy Event

Market update

Alice Bailey, AHDB



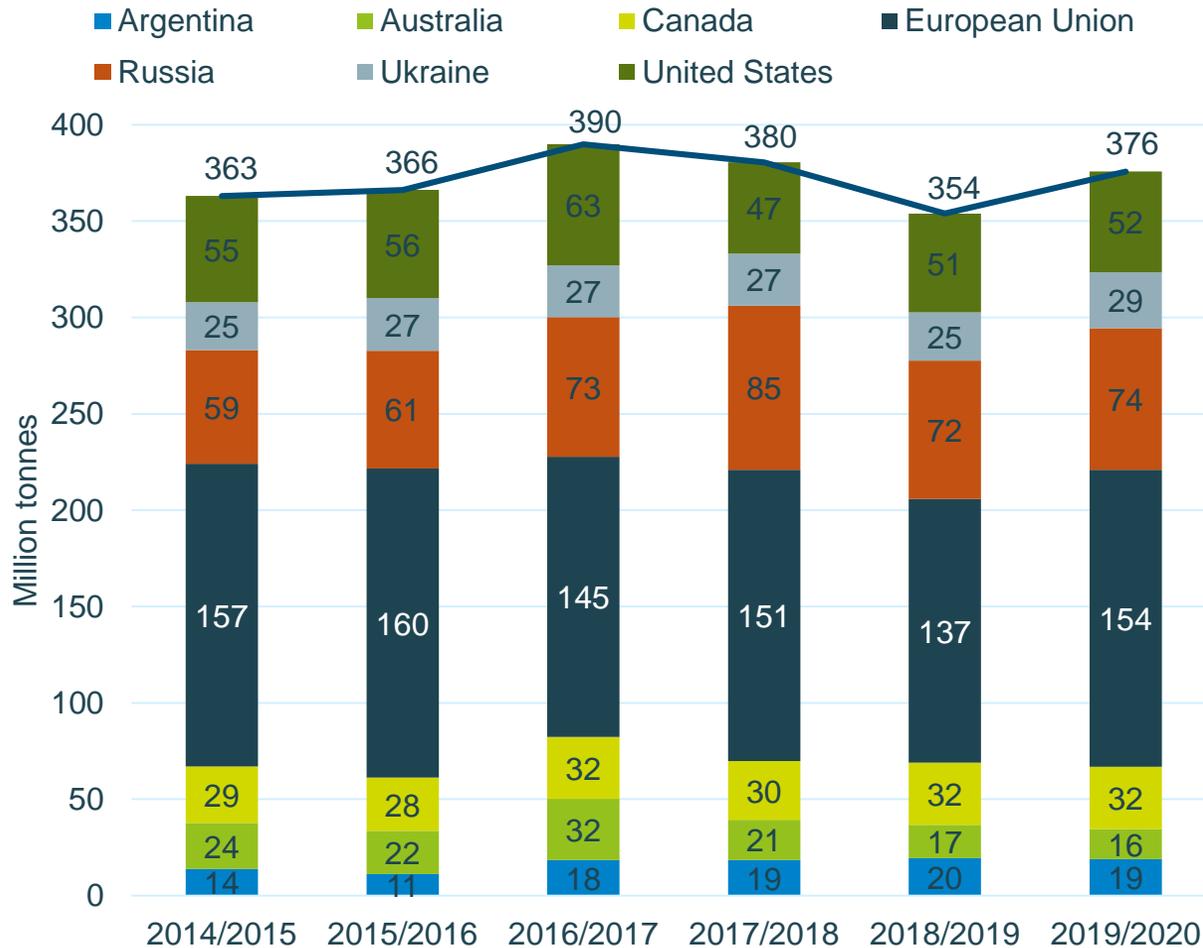
Global market - Cereals

The global drivers for the rest of this season and beyond.

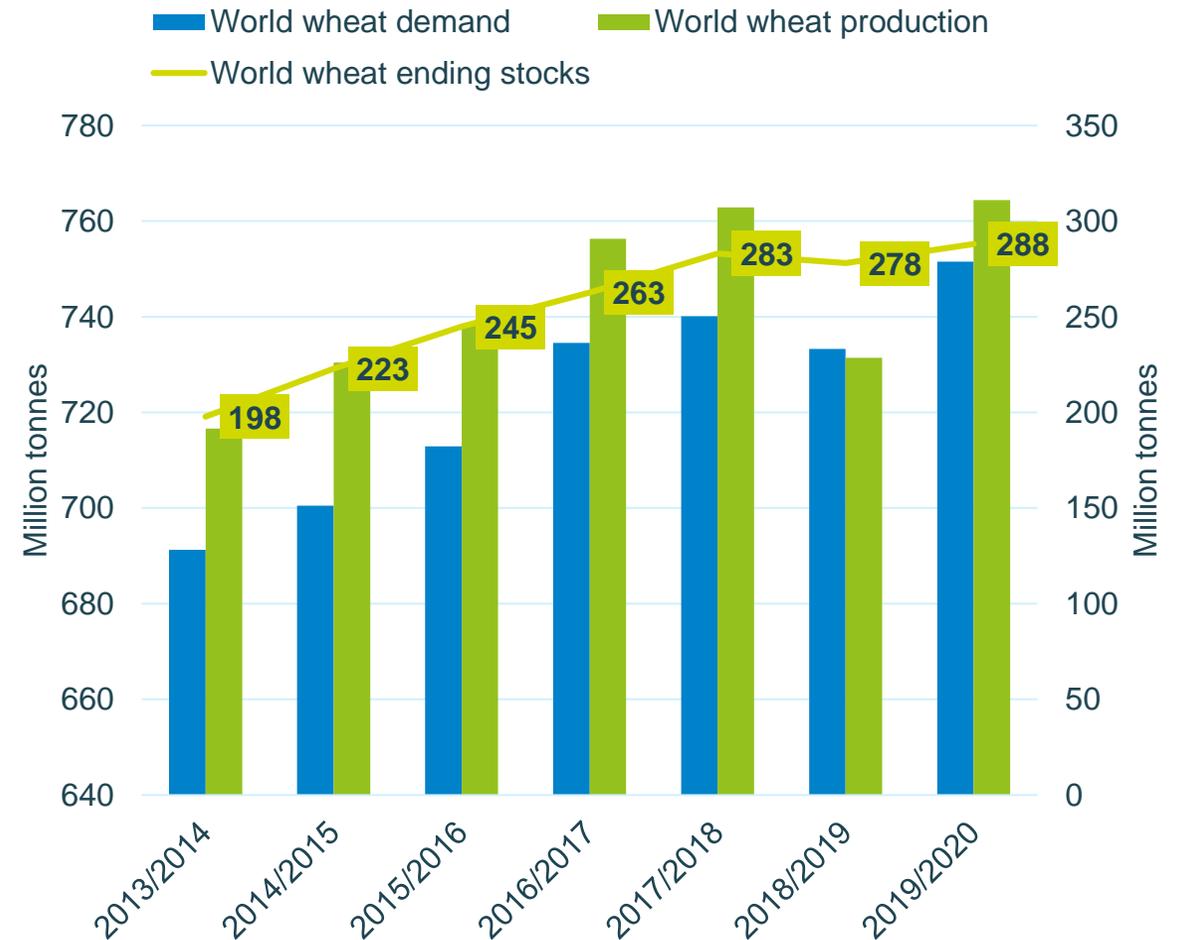


Major exporter production up in 2019/20, stocks grow again

Major exporter wheat production

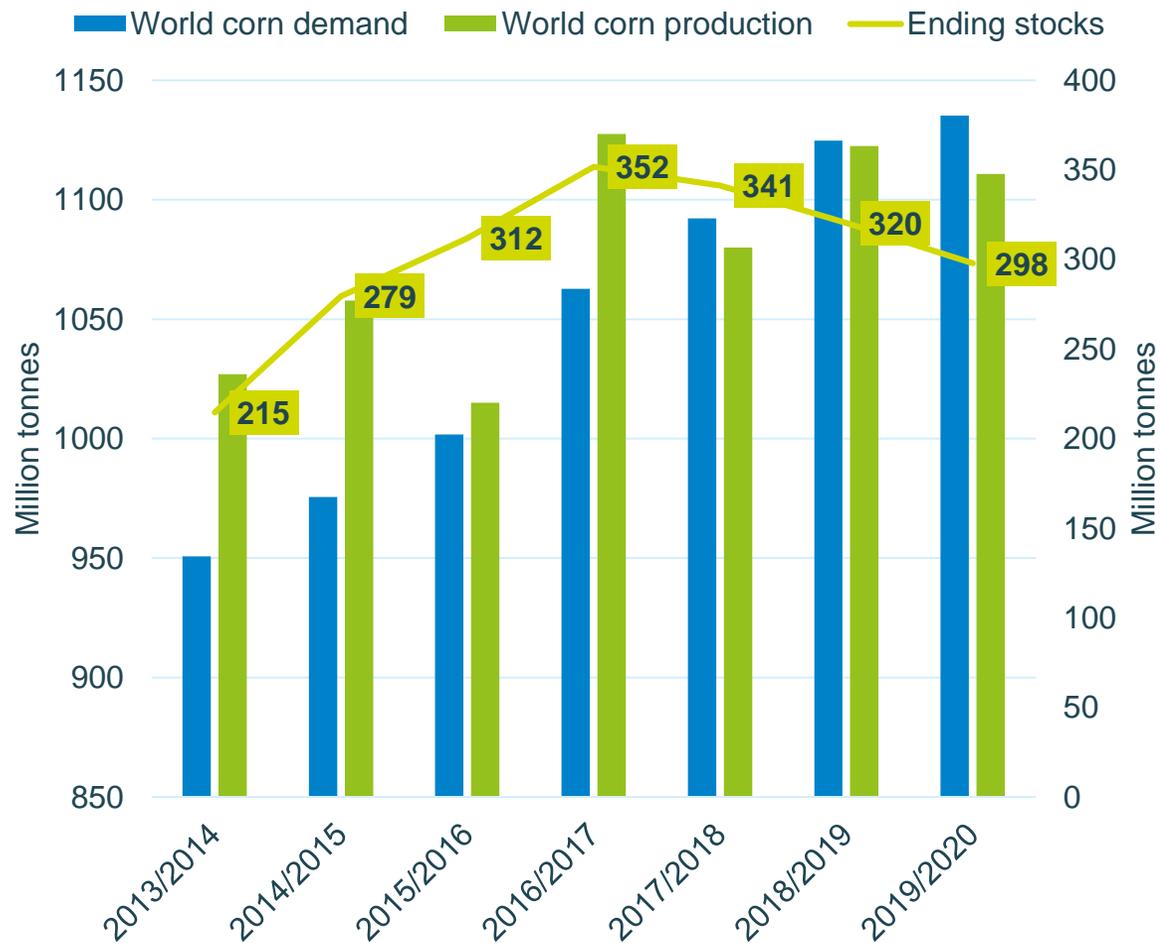


World wheat S&D



Tighter maize picture, still comparatively huge stocks

World corn S&D



Source: USDA

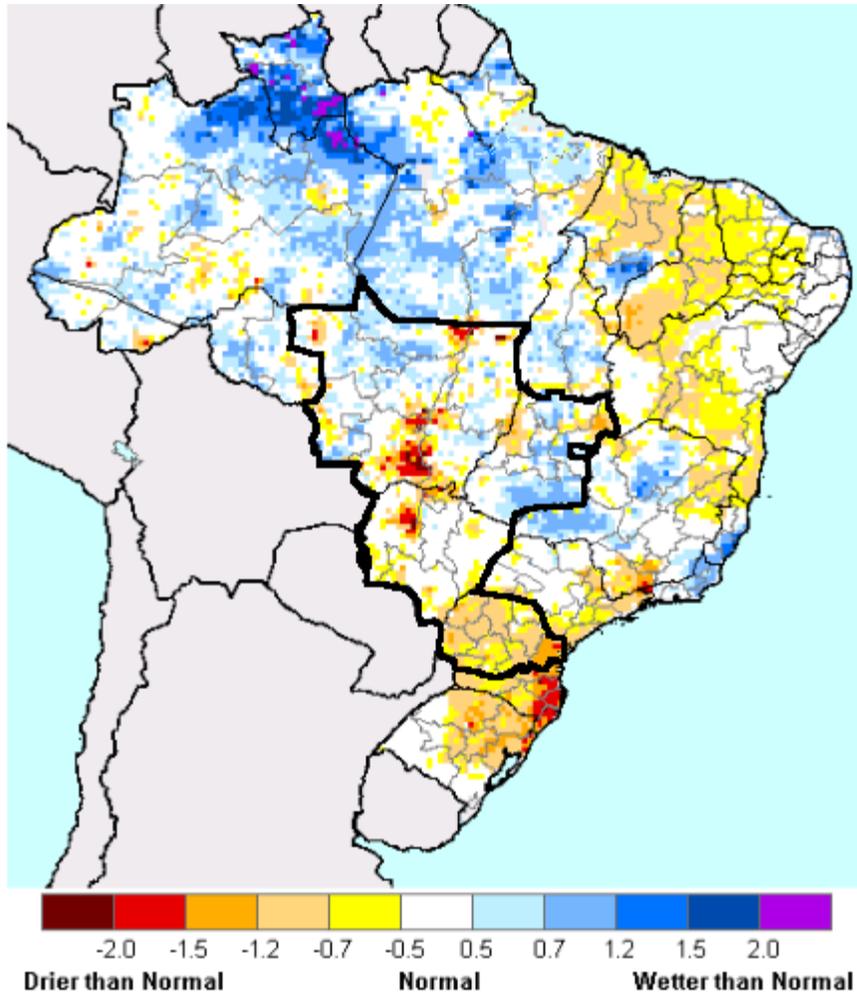
Nearby Chicago corn futures



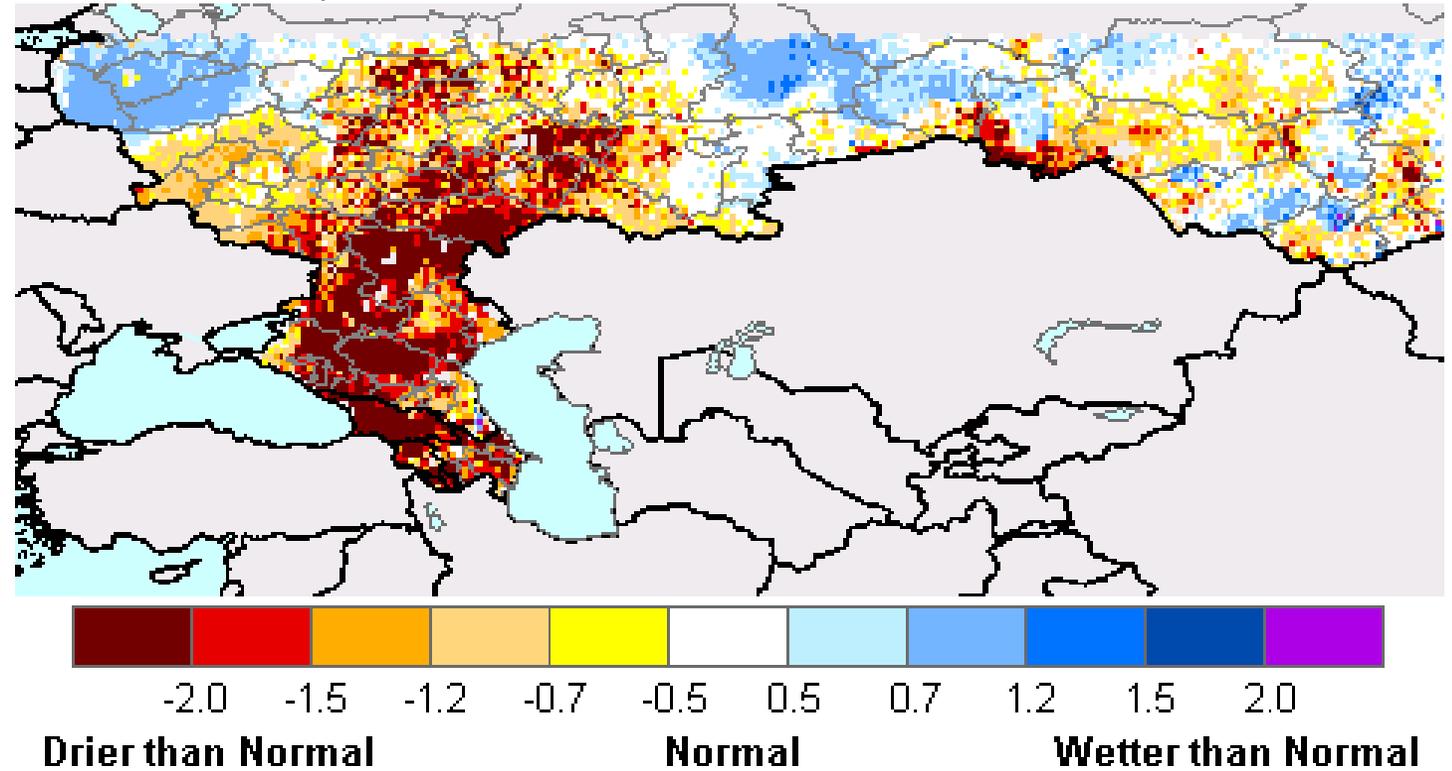
Source: Refinitiv

Weather a key watch point

Brazil



Russia

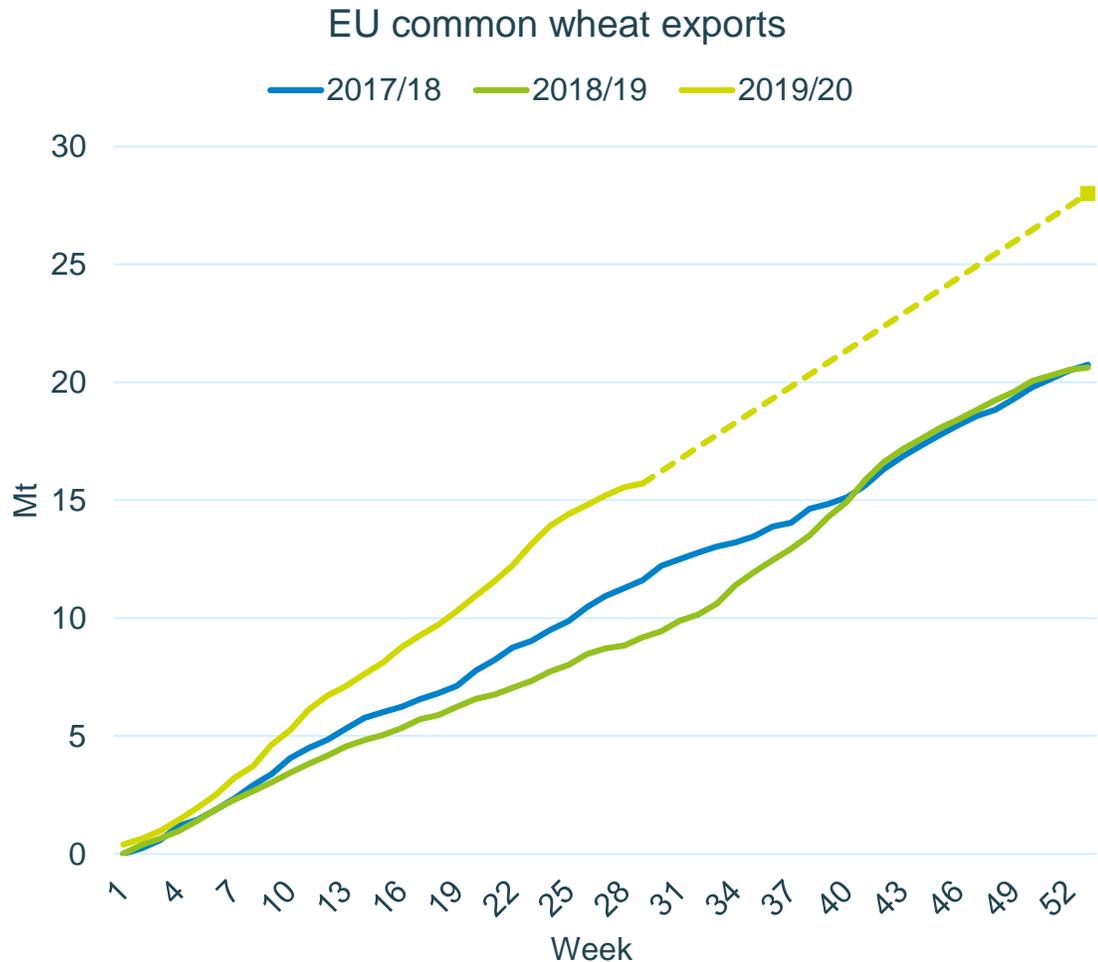


EU market - Cereals

What's going on in EU markets?



EU has a need to export wheat, but logistical headaches



Major French ports blockaded in new pension strike



This morning, ferry companies out of Dunkirk, Calais and Dover were reporting a good service despite the blockades

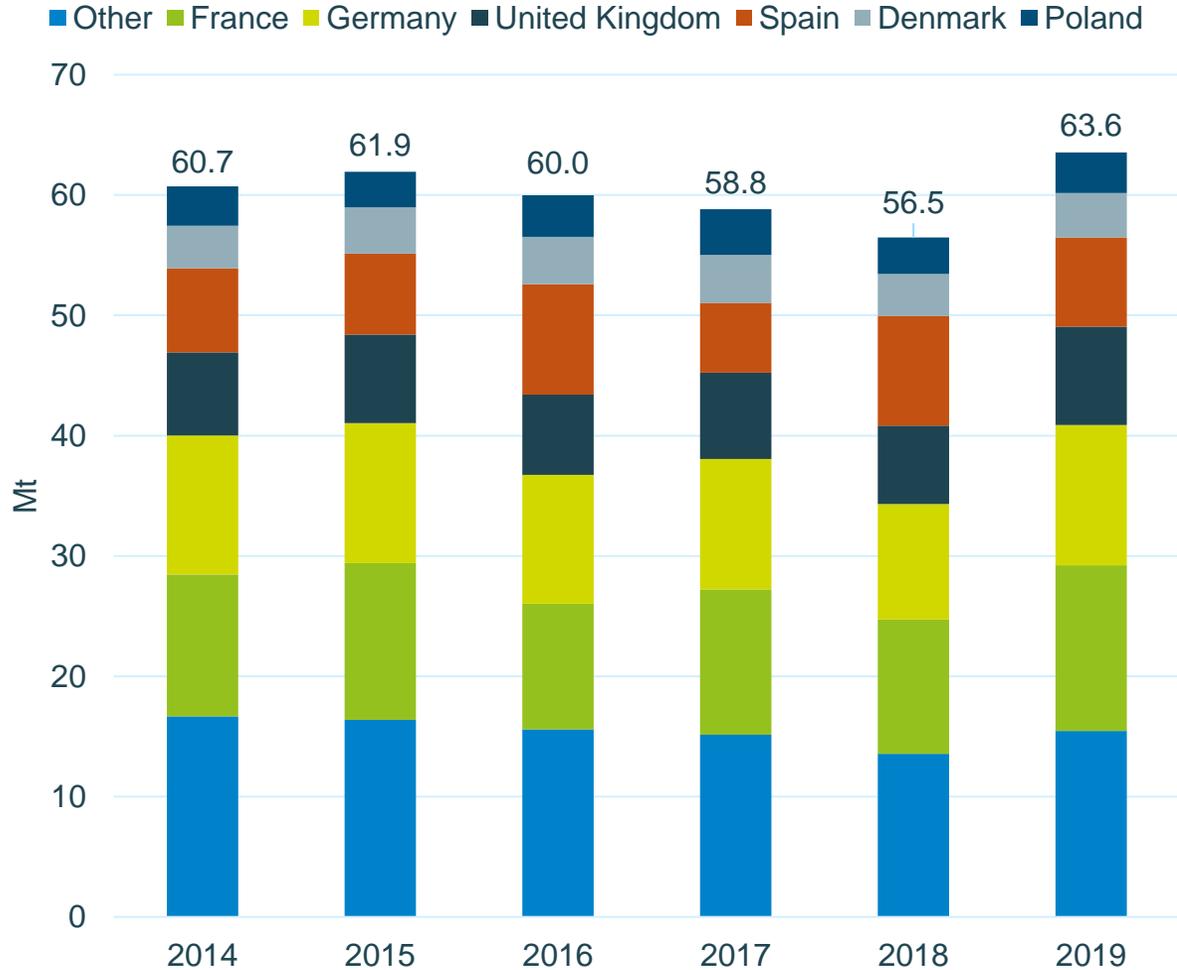
Major ports in France - including Calais, Dunkirk and Marseille - are still being blockaded today (Friday January 17) after unions called for a 72-hour strike, with some ferry services reporting disruption.

National port union CGT *des Ports et Docks* called on all workers in the sector to strike against the government's pension reform from Tuesday January 14, continuing into yesterday and today. The movement is being called "port mort (dead port)".

At least seven major ports have joined the movement, including Calais, Dunkirk, Le Havre, Rouen, Nantes-Saint-Nazaire, La Rochelle and Marseille. So far, Bordeaux has not yet joined the action.

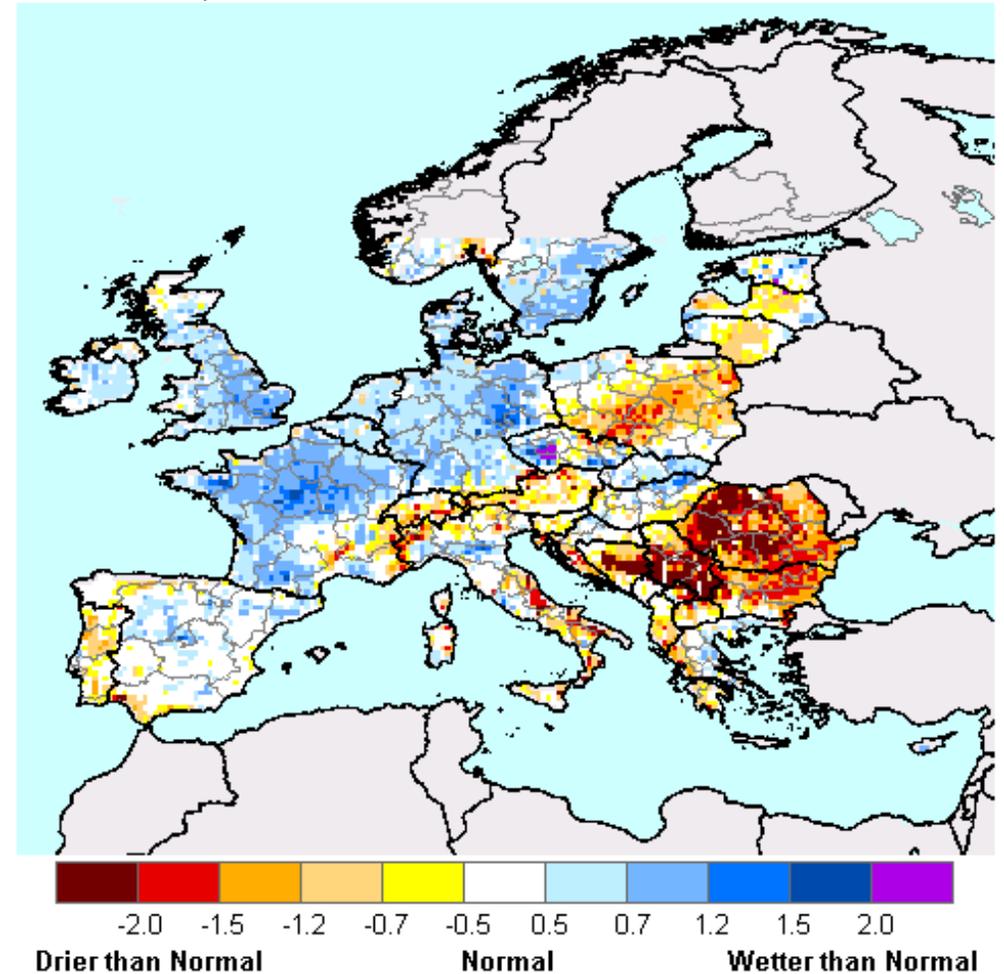
Big EU barley crop in 2019/20

EU barley Production



Surface Soil Moisture Anomaly (SMAP)

Jan. 9 - Jan. 11, 2020



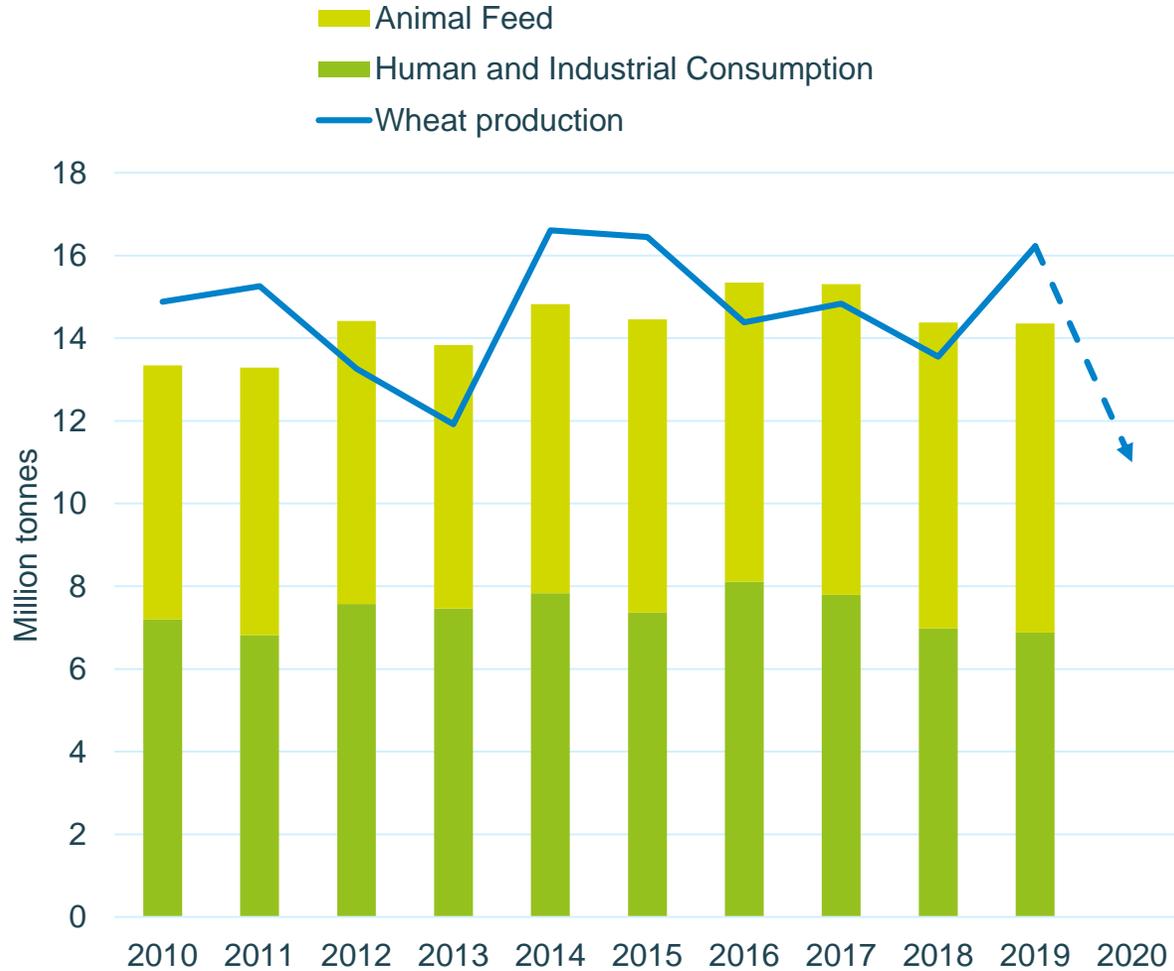
Domestic market - Cereals

What can we expect in domestic markets over the next 12 months?



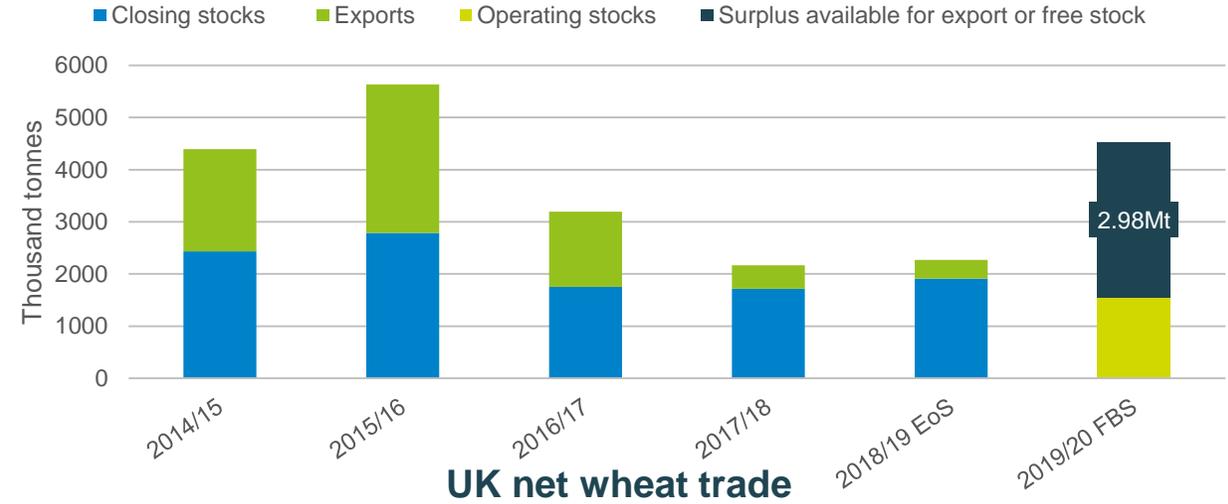
UK Wheat S&D

UK production and domestic demand

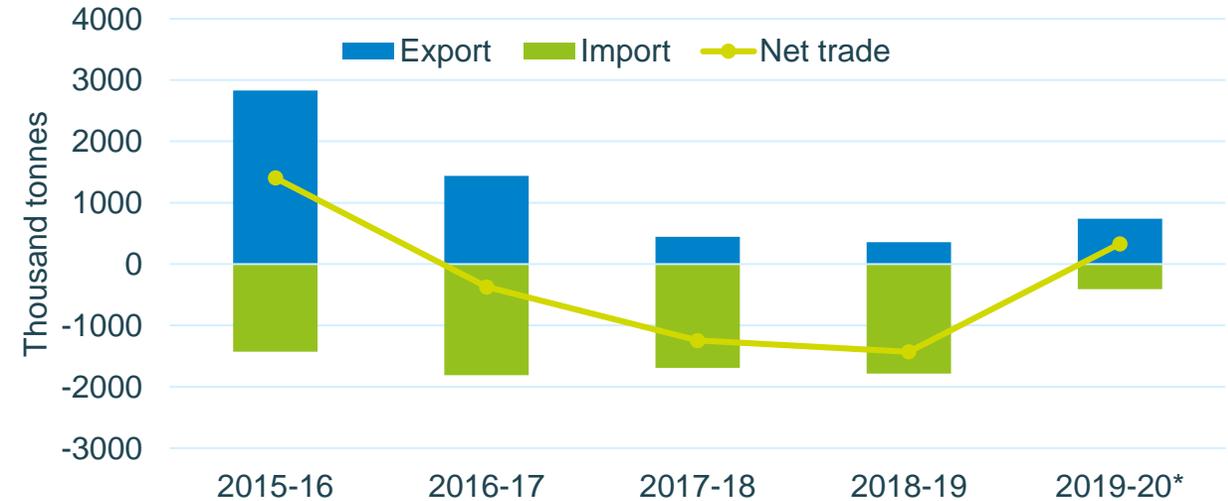


Source: AHDB

UK volume of wheat for free stock or export



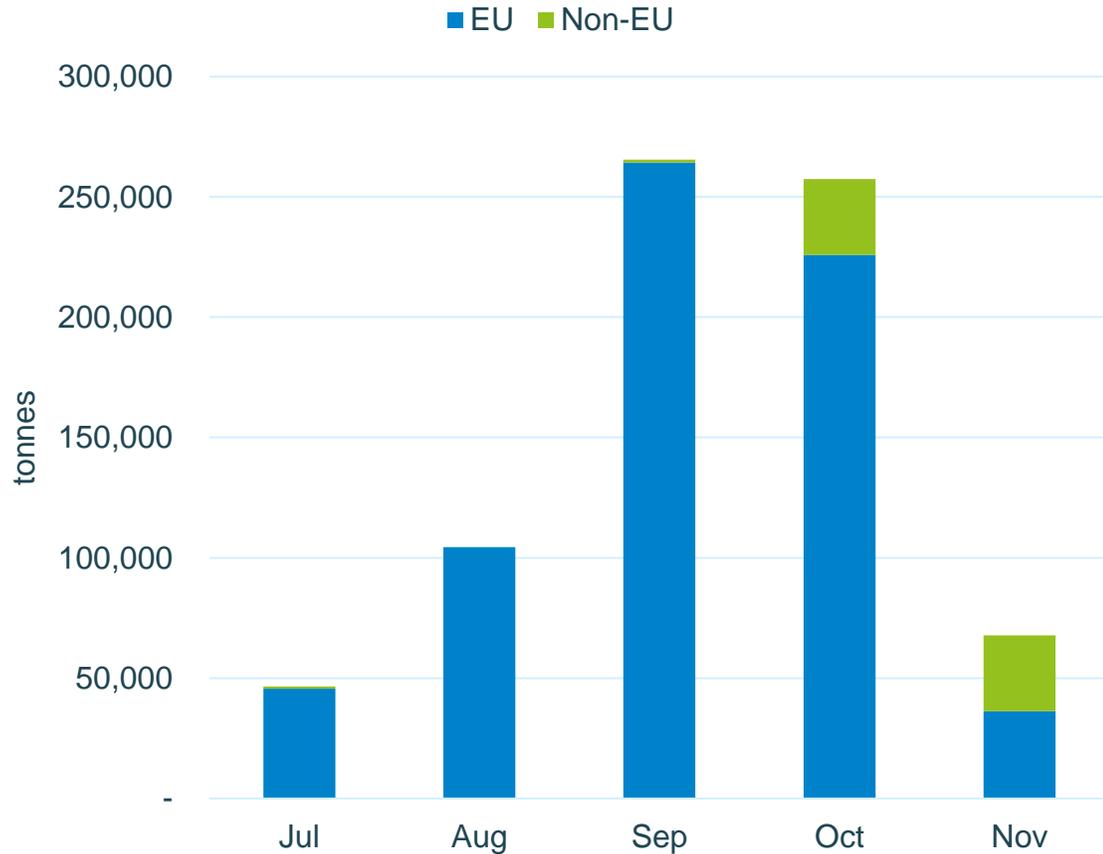
UK net wheat trade



EoS: End of Season, FBS: First Balance Sheet

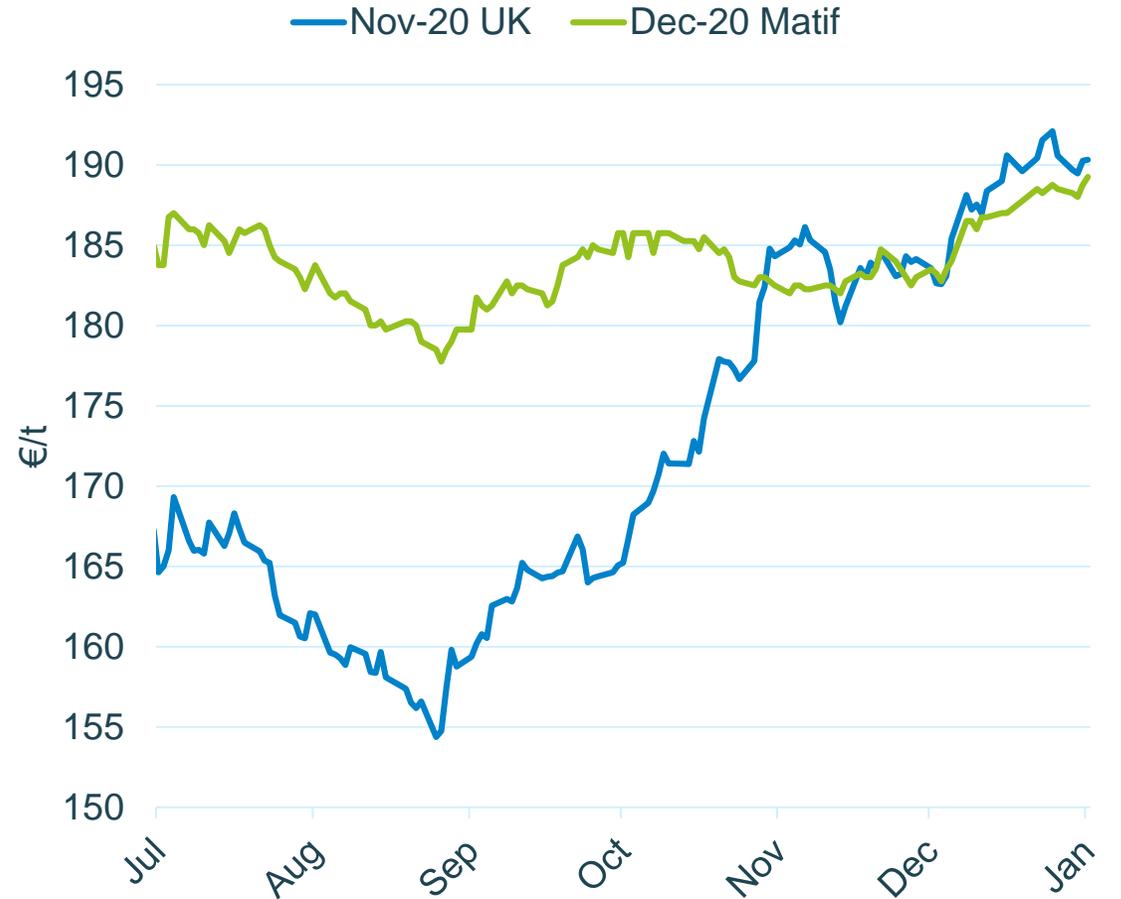
Is the UK market already reaching it's peak?

UK wheat exports



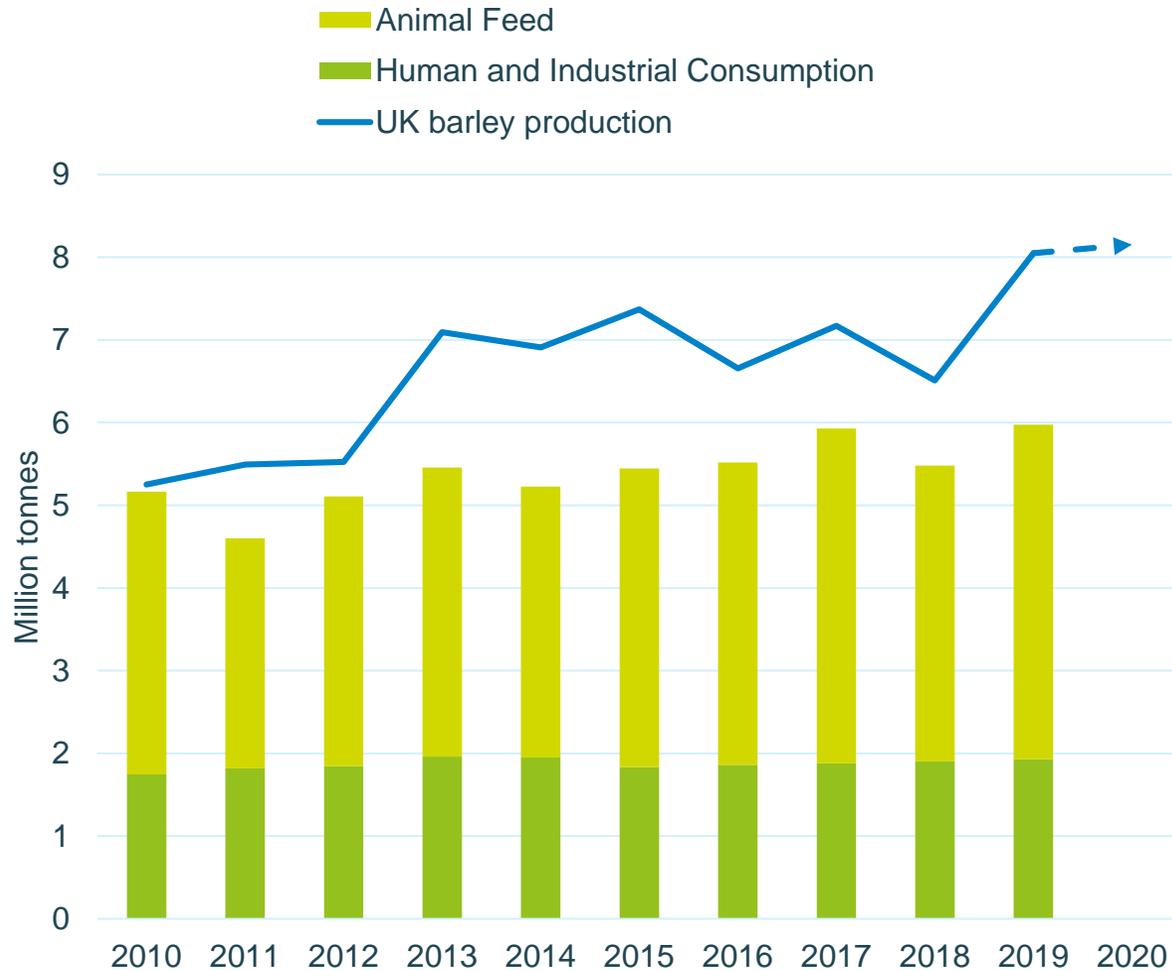
Source: HMRC

UK feed wheat futures rise above EU markets

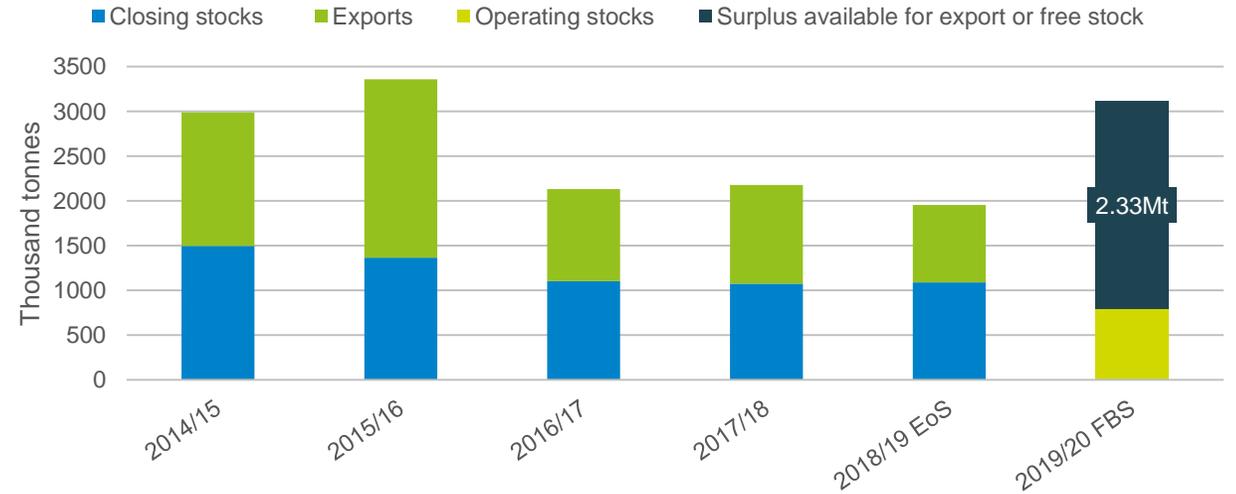


UK barley S&D

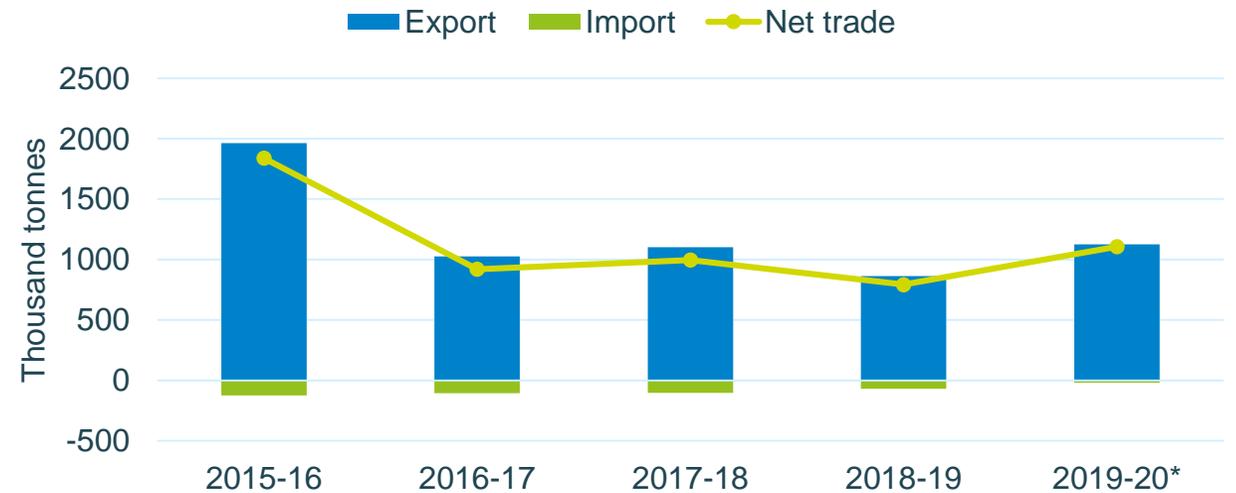
UK barley production and domestic demand



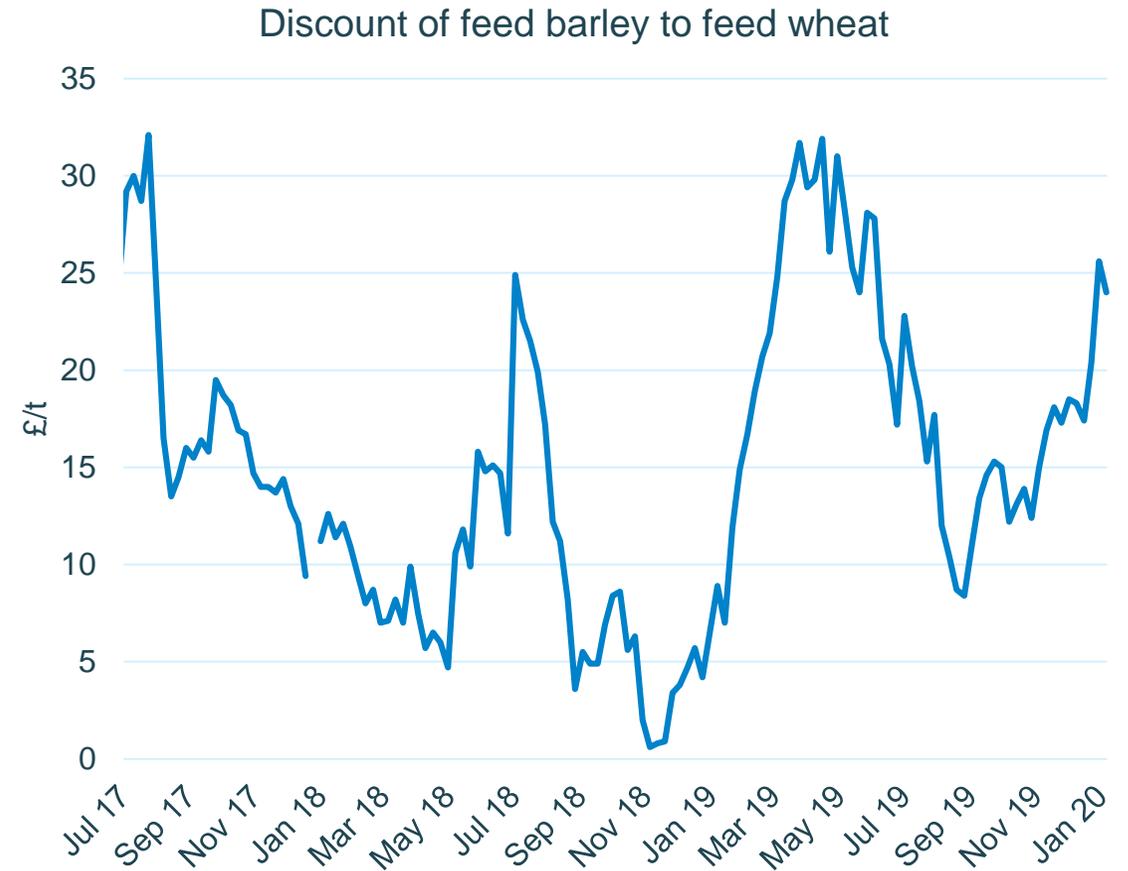
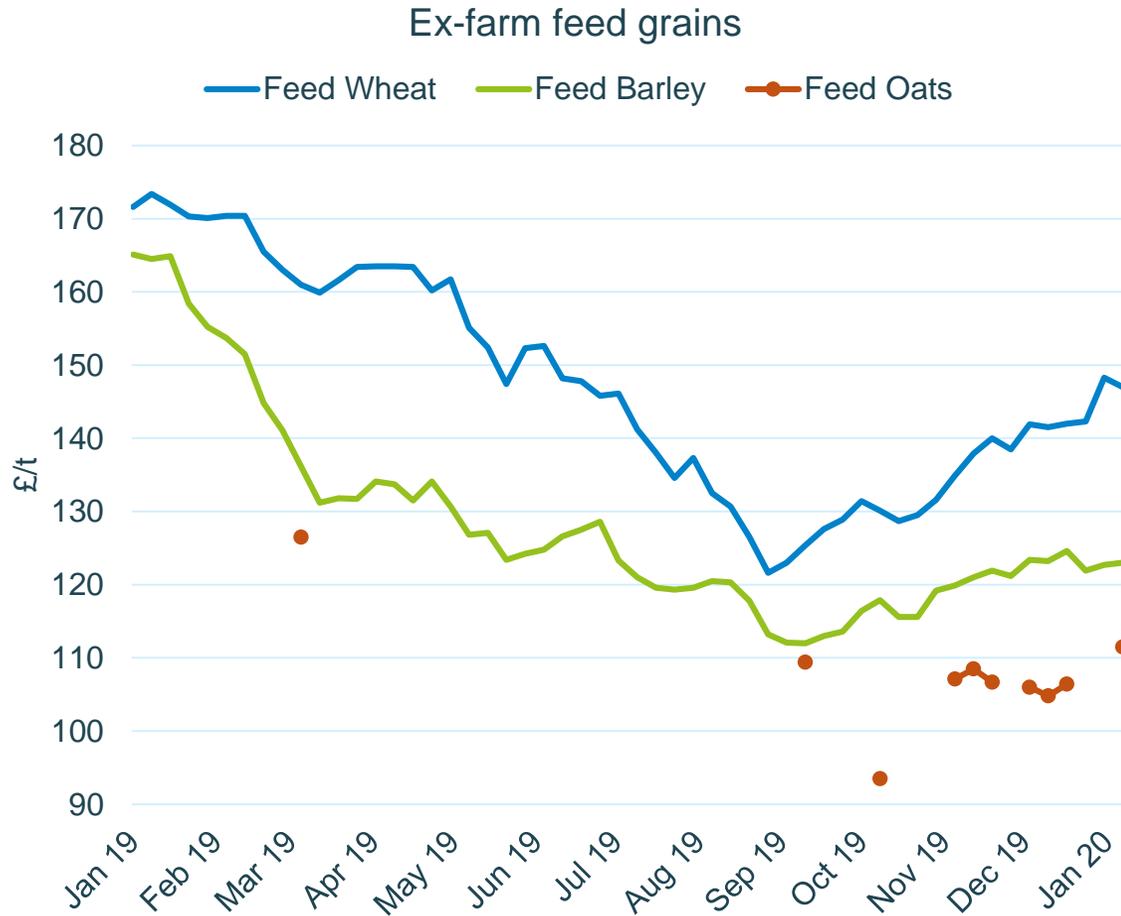
UK volume of barley for free stock or export



UK net barley trade



Prices supported by wheat market concerns but spring crop rise expanding discount of barley



Cereals summary

2020/21 winter wheat production – question marks in the EU, Black Sea and US. Global maize planting to be watched.

New crop outlook looks at less wheat, more barley and maize. Pressure to continue for barley prices. EU & UK

Large barley crops globally and significant crop in UK could see prices capped

Oilseeds

Global drivers, EU and UK situations



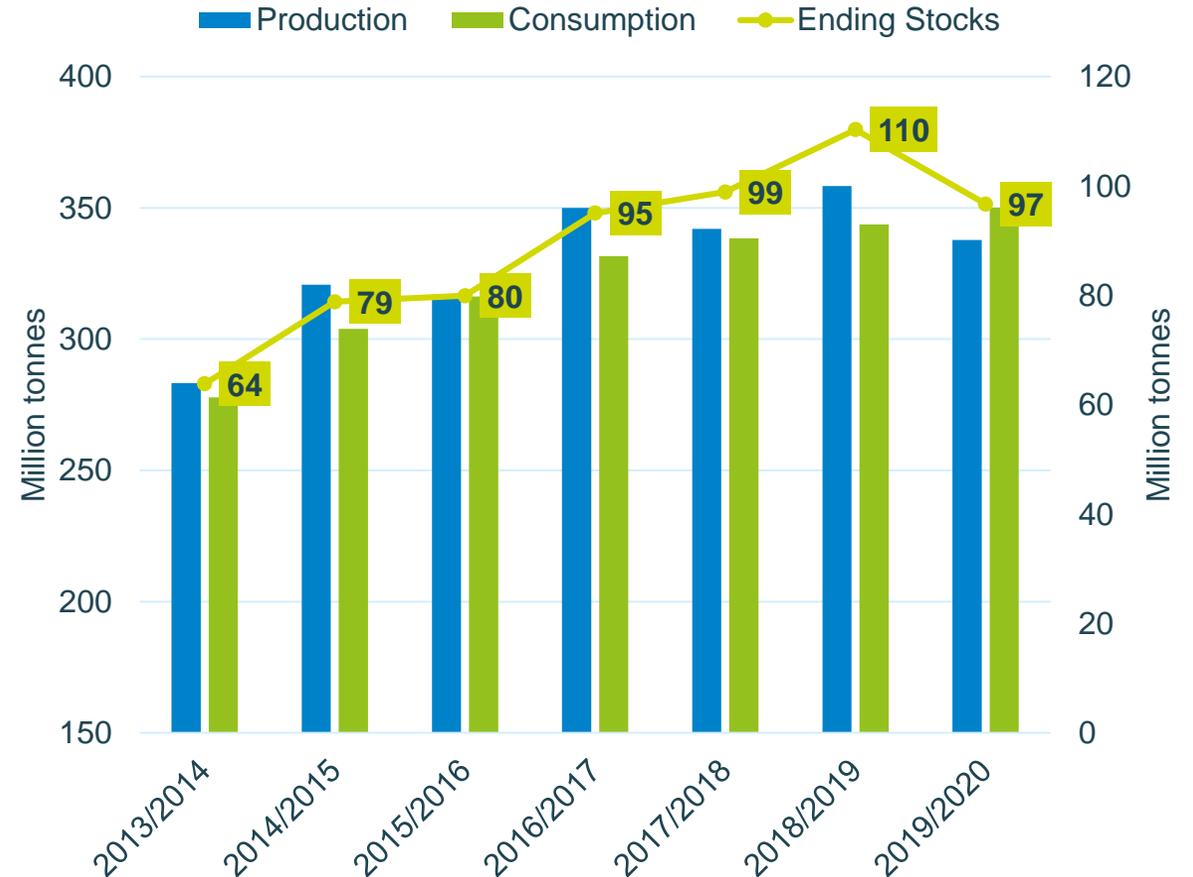
Soyabeans tighter year-on-year but China key

Nearby Chicago soyabean futures



Source: Refinitiv

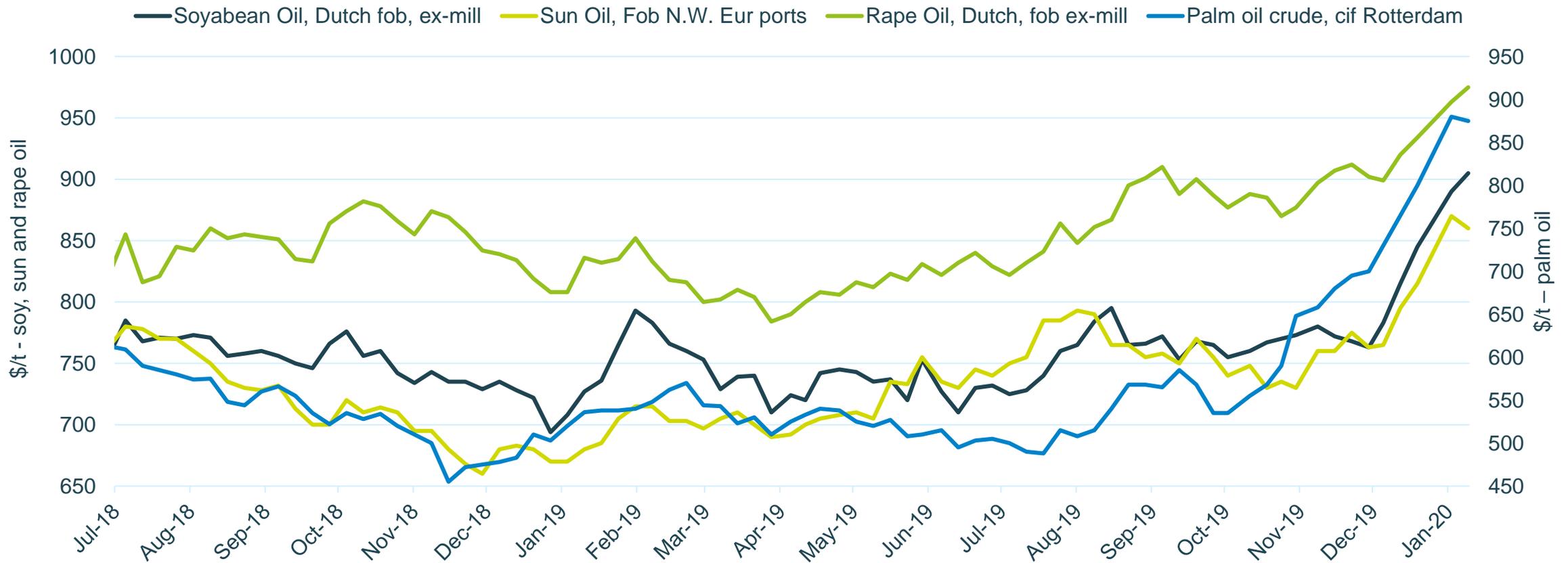
Global soyabean S&D



Source: USDA

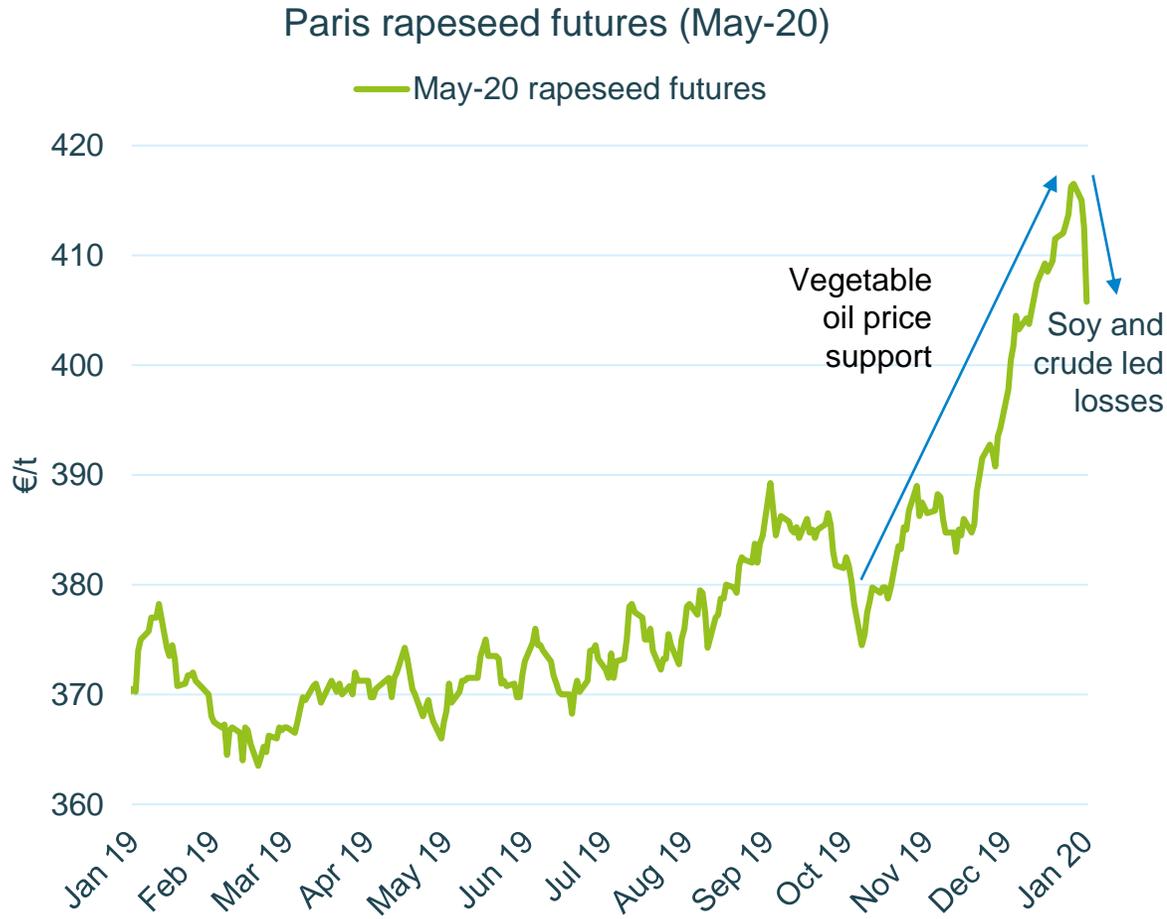
Oil having an increasing influence over oilseeds

European Vegetable oil prices

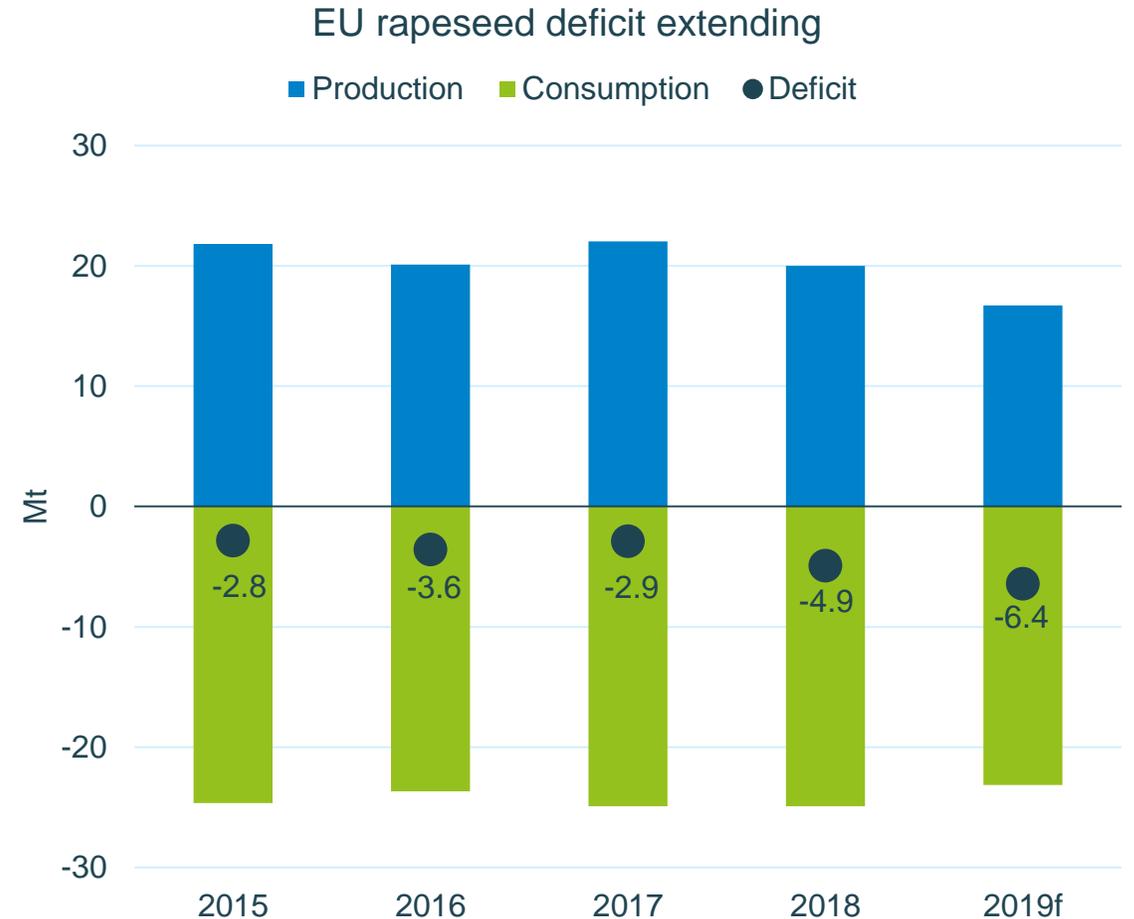


Source: Oilworld (www.oilworld.biz)

EU rapeseed deficit growth continues



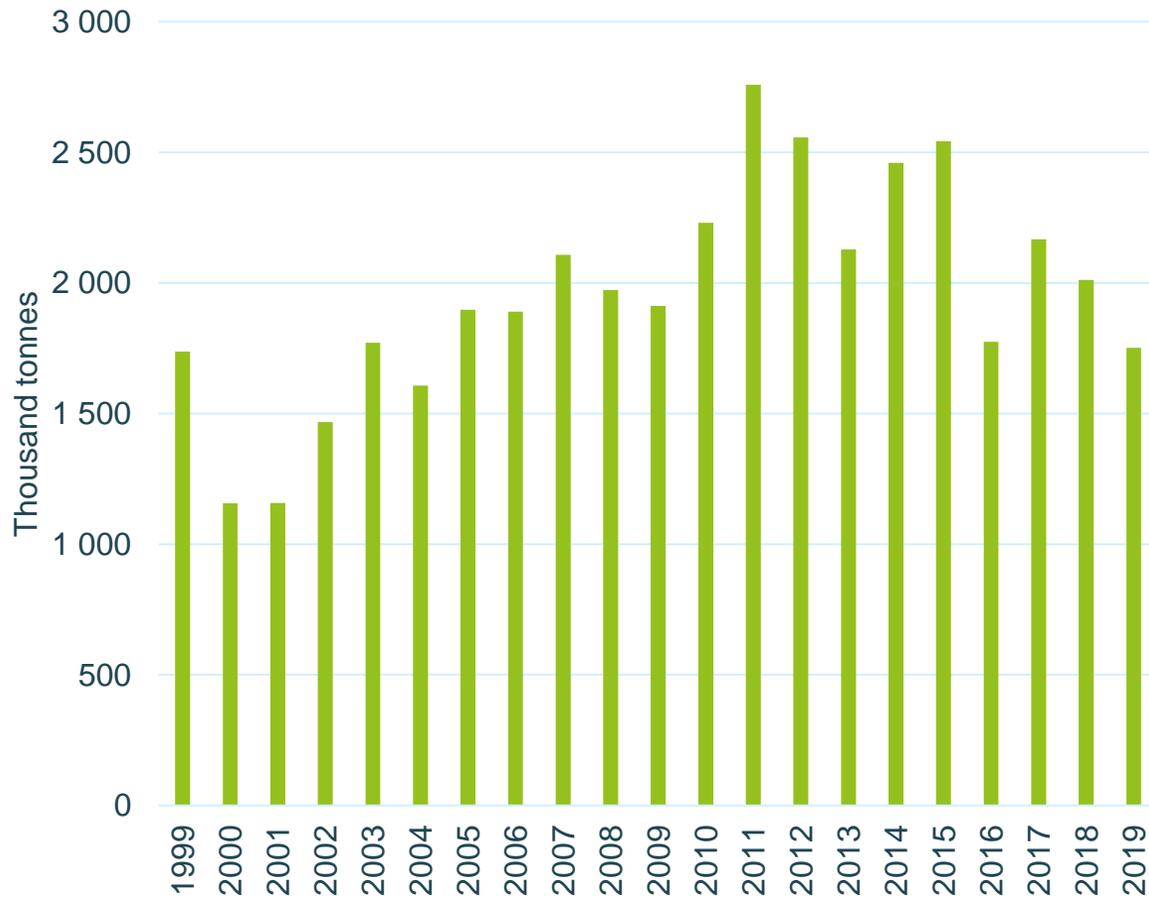
Source Refinitiv



Source: EU Commission

Domestic oilseed rape deficit, prices dictated by the global market.

UK oilseed rape production



Source: Defra

UK delivered OSR prices (Spot, Erith)



Source: AHDB Delivered Survey

Oilseeds summary

EU rapeseed deficit growing, leaving prices at the mercy of global levels.

Liquid markets being key drivers of oilseeds and one to continue to watch.

China's come back from AFS and relationship with US need to be monitored to establish demand

North West Regional Agronomy Event

Close

Michelle Nuttall, AHDB



Nutrient management

Key AHDB Publications

- AHDB nutrient management guide (RB209)
- Crop biostimulants

AHDB Experts

- Sajjad Awan, AHDB Resource Management Scientist – Cereals
- Alice Sin, AHDB Resource Management Scientist – Potatoes

Current AHDB Research

- Nitrogen and sulphur management for oats (21140039)
- Nitrogen and sulphur management for milling wheat (21140040)
- Nitrogen and sulphur management for malting barley (21140038)

Integrated Pest Management

Key AHDB Publications

- Encyclopaedia of pests and natural enemies
- Encyclopaedia of arable weeds
- Encyclopaedia of arable diseases
- Recommended Lists for cereals and oilseeds

AHDB Experts

- Charlotte Rowley, Crop Protection Scientist – Pests
- Joe Martin, Crop Protection Scientists – Weeds
- Catherine Harries, Crop Protection Scientist – Diseases

Key current AHDB Research

- Novel approaches to CSFB control (21510042)
- Management of aphids and BYDV risk (P1901308)
- Fungicide performance in wheat, barley and oilseed rape (21120013)
- Monitoring and understanding fungicide resistance (21120018a)
- Investigating herbicide resistance in brome (21120059)
- Cost-benefit of variable rate PPPs (2140012101)

IPM tools

Disease monitoring tools

- Phoma forecast
- Light leaf spot forecast
- BYDV management tool
- Sclerotinia risk report
- Mycotoxin rainfall risk tool

Pest monitoring tools

- AHDB Aphid News
- Wheat bulb fly

Crop production tools

- RB209 App
- Variety selection tool (December 2019)

Sign up to alerts:
comms@ahdb.org.uk

or visit:
ahdb.org.uk/tools

GREATSOILS

AHDB Publications

- Introduction to soil biology
- How to count earthworms
- Soil assessment methods
- Measuring and managing soil organic matter
- Soil pH – how to measure and manage it based on soil texture
- Field drainage guide
- Testing the soil health scorecard case studies

Current AHDB research programmes

- Soil Biology and Soil Health
- Soil and Water Research Partnership: Rotations

AHDB Experts

- Amanda Bennett, Resource Management Scientist – Soils
- Alice Sin, Resource Management Scientist – Soils & Water

Find out more at
ahdb.org.uk/greatsoils

GREATSOILS

Download AHDB's new guide on the principles of soil management

Learn more about:

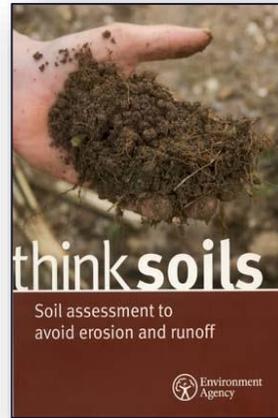
- *Soil health*
- *Soil texture and structure*
- *Cation exchange capacity*
- *Soil organic matter*
- *Soil biology*

www.ahdb.org.uk/greatsoils



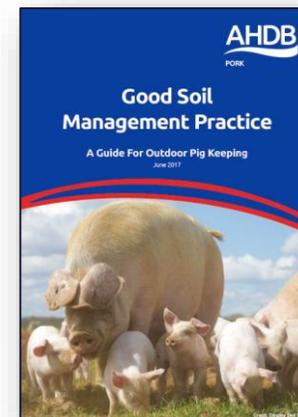
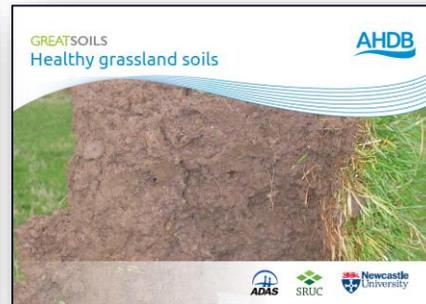
AHDB soil management publications

Cross-sector guides



Download these and find more information at ahdb.org.uk/greatsoils

Sector guides



Coming soon..

Arable soil management guide



Business management skills

Tools

- Machinery cost calculator
- SWOT analysis template
- Personal objectives worksheet
- Business objectives worksheet
- Brexit impact calculator

AHDB Experts

- Harry Henderson, KE Manager – Machinery
- Amie Burke, Skills Development Manager

Webinars

- Labour and machinery
- Characteristics of top performing farms
- Using farm business analysis tools

Tools available at ahdb.org.uk

Past webinars available at [Youtube.com](https://www.youtube.com)
by searching *AHDB Cereals & Oilseeds*

Strategic Cereal Farms

Strategic Cereal Farm East

Harvest 2019 tryouts

- Cover crops
- Early crop biomass
- Reduced inputs

ahdb.org.uk/farm-excellence/strategic_cereal_farm_east



Strategic Cereal Farm West

Harvest 2019 tryouts

- Managed lower inputs
- Impact of cultivations on crop rooting
- Managing pests by boosting natural enemies

ahdb.org.uk/farm-excellence/strategic_cereal_farm_east



Get involved

Feedback your knowledge gaps to your KEM – we use these to generate ideas for the demonstrations on the strategic farm

Come along to a meeting

Use the information online to conduct your own baselining or try-outs

AHDB Monitor Farms and Strategic Arable Farms



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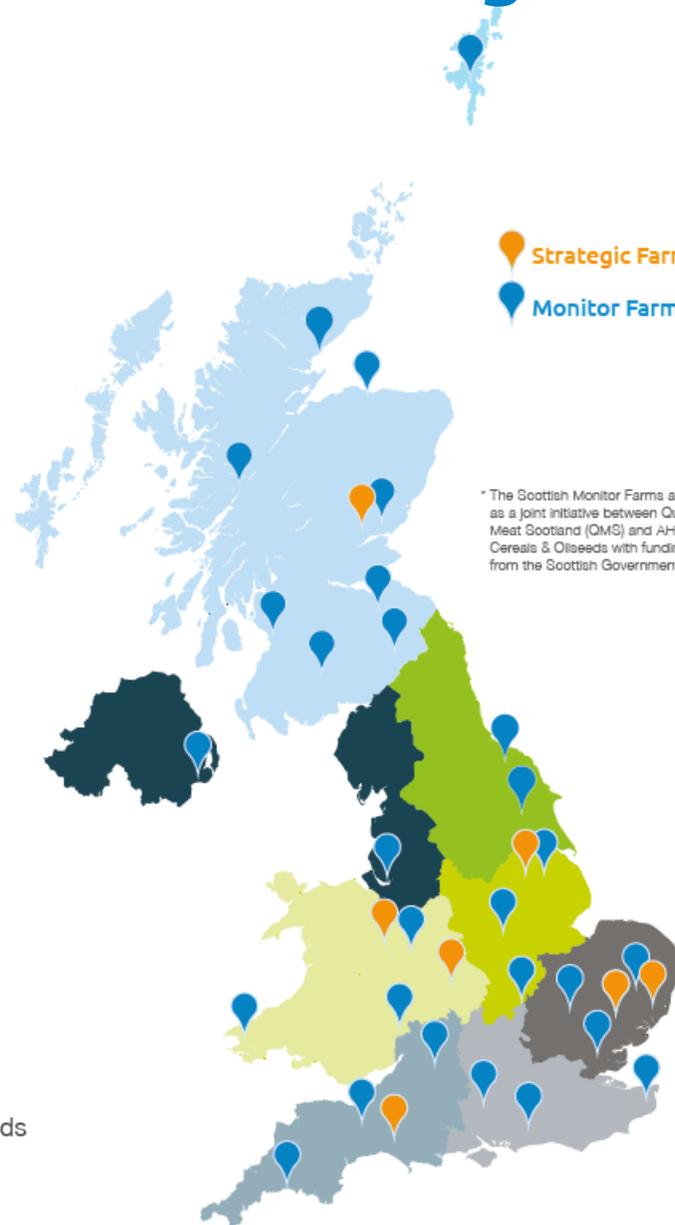
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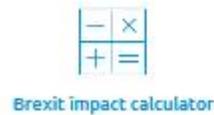
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BREXIT

- Latest information
- Tools
- Horizon documents
- Contact details

Visit:
ahdb.org.uk/brexit

The screenshot shows the AHDB website's Brexit section. At the top is the AHDB logo and a search bar. A navigation bar contains links for Brexit, Projects, Markets and prices, Knowledge library, Tools, News, What we do, About AHDB, and Contact us. The main content area is titled 'Brexit' and features several tiles: a large tile with the EU and UK flags titled 'Our breakdown of Government advice'; a tile with a map of the UK and a question mark titled 'Brexit questions answered'; two 'HORIZON' document covers, one titled 'Characteristics of top-performing farms' and the other 'Brexit prospects for UK beef and sheep meat trade'; a tile with a globe and network diagram titled 'Brexit prospects for agri-food trade'; and a tile with a cow's face titled 'What will hard Brexit mean for sheep meat production?'.



Yield Enhancement Network (YEN)

The YEN exists to help any member from the UK, Europe or beyond to close the gap between current yields and potential yields

Report includes:

- Data on growing conditions
- Soil analysis
- Yield analysis
- Crop nutrition
- Treatment comparisons



YEN Yield Testing Message Lab

6 February 2020

Kettering Conference & Leisure Village,
Kettering, Northamptonshire NN15 6PB

Knowledge gaps

If there is a topic you would like to know more about, or if you have suggestions for AHDB research, please include it on your feedback form.

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Publications

FACTSHEET

AHDB

Cereal straw – incorporate or sell?

Cereal straw has become an increasingly versatile and valuable commodity. Today, straw markets include renewable energy systems, for both domestic heating and power generation, overwinter carrot production and mushroom production. This is in addition to its traditional use as livestock bedding. At the same time, the incentives to chop straw have increased. Soil health is one of the main drivers, with many aiming to reap the longer-term benefits associated with straw incorporation. Another key reason cited for incorporating straw is that it is an 'easier' option, for some.



The increase in demand for straw has seen prices respond. In the last decade, big bale straw prices in excess of £40/t have become more frequent. Volatile demand (e.g. spikes in consumption for animal bedding during long, cold winters) and supply also result in significant short-term price fluctuations.

This publication looks at the pros and cons associated with the decision to either incorporate or sell straw. It provides examples of how to value straw, especially its nutrient value, and looks at the implications to other

AHDB

Nutrient Management of Cereals and Oilseed Rape

2019-2020

Updated recommendations

FACTSHEET

AHDB

Virus management in cereals and oilseed rape

Symptoms
Infections cause leaf yellowing and stunting. Initially, symptoms are confined to individual plants scattered throughout the crop. Eventually, distinct circular patches develop. Sometimes, these patches can merge to form extensive areas of infected crop. Red tipping of upper leaves can also occur. Very early infections can result in plant death.

Life cycle
The virus, which exists as several strains, is transmitted by various species of cereal aphid. The bird cherry-oat aphid (*Rhopalosiphum padi*) is the principal vector in the South. In the Midlands and the North, the grain aphid (*Sitobion avenae*) is usually more important.

Barley yellow dwarf virus

Figure 1. Yellow sticky trap

The transmission of viruses to cereals and oilseed rape by aphids is the focus of this publication. Some soil-borne vectors can also transmit viruses. These are described in the AHDB Encyclopaedia of cereal diseases.

The key period for virus transmission by aphids is in the autumn. Symptoms typically appear in spring. When infections are unusually extreme, entire plants can be killed. The extent of yield losses is determined by numerous factors, which are outlined in this publication. Earlier-sown winter crops and late-sown spring crops tend to be at a higher risk, due to the timing of aphid migrations. Risk is heightened in all crops by mild conditions in autumn and winter, which encourage aphid flight, reproduction and movement within the crop.

Figure 3. Winged and wingless aphids can enter crop

into cereal crops

from grass or the most common

from grass or on

propagative not pass directly quered through ie between transmit the

CEREALS & OILSEEDS

AHDB

Arable review 2019–20

Next Monitor Farm Meeting



Man and machine - How is the Monitor Farm performing and how your figures compare?

See you on: Thursday 6th Feb 2020

Michelle Nuttall Michelle.Nuttall@ahdb.org.uk / M: 07778 143404 / [@Cereals NW NI](#)

A vibrant landscape of a green field at sunset. The sun is low on the horizon, casting a warm glow over the scene. The sky is filled with colorful clouds, ranging from soft pinks and oranges to deep blues and greys. A path of dirt or grass leads from the foreground towards the horizon, flanked by lush green grass. In the distance, rolling hills and a few buildings are visible under the twilight sky.

**‘Inspiring our farmers, growers
and industry to succeed in a
rapidly changing world’**