



# Cover Crops

Paul Brown – Kings and Frontier



# Cover Crops .

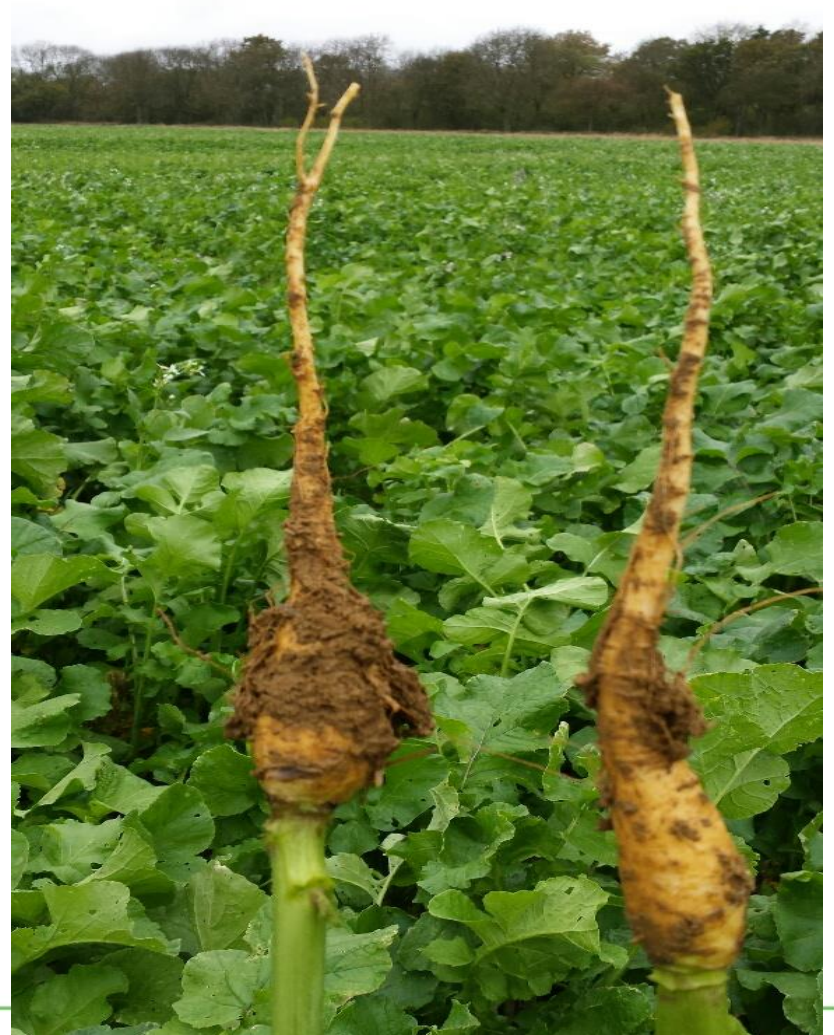


## The plan --

- What are they .
  - What chiefly do they do .
  - Types .
  - Termination .
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# What is a Cover crop ?





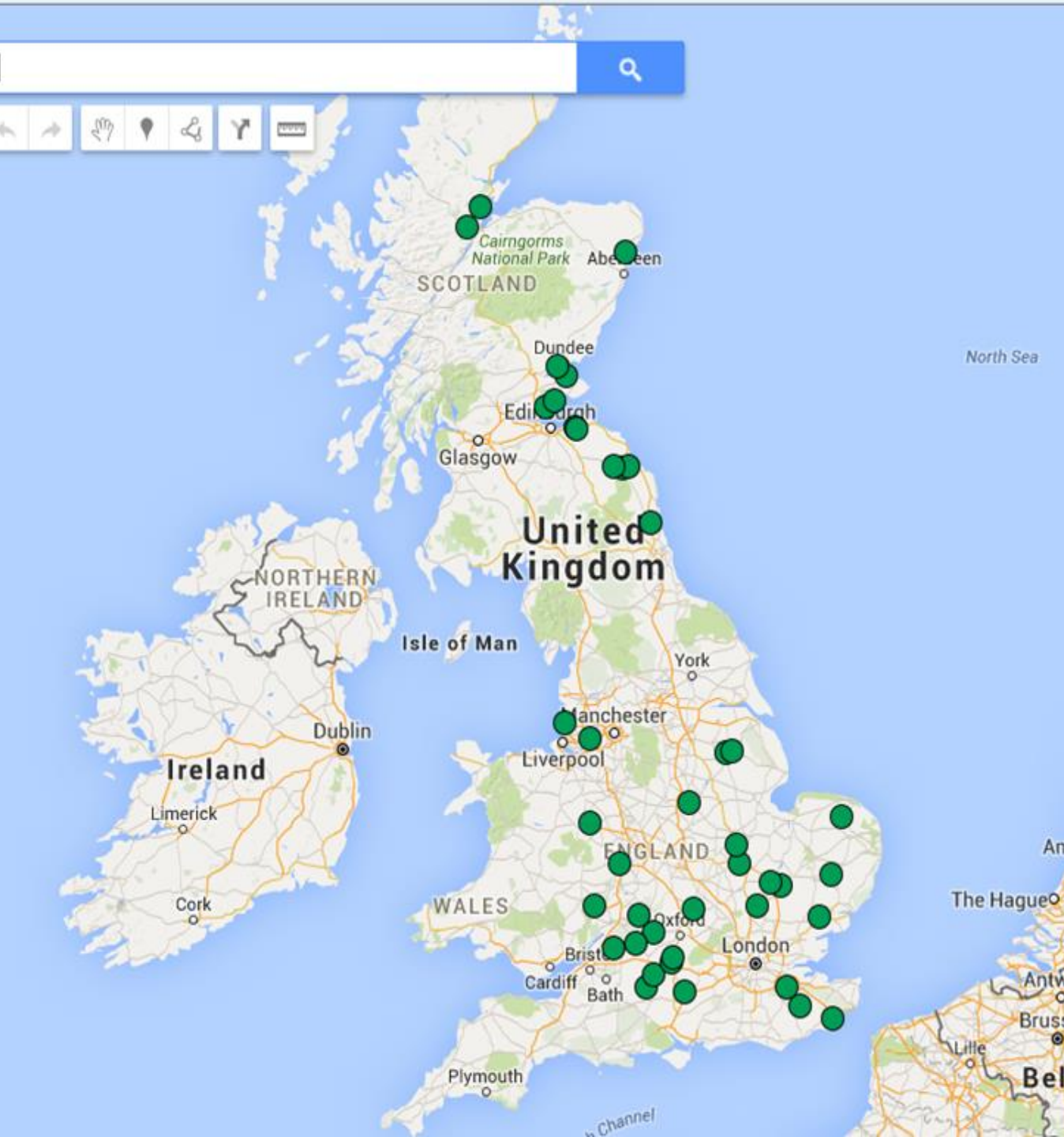
We need to avoid this loss.





## Kings Green Cover Demonstration Sites

Autumn/Winter  
2015/16



# Cover crops can be valuable in 4 key ways



1. Capture a proportion of remaining nutrients and prevent leaching .
  2. Improve soil structure and vitality and allow cheaper cultivations.
  3. Reduce weeds and some soil pests
  4. Improve yields
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# Green cover crops - overview



- Huge interest across the UK
  - A lot of interest at Open days and 25% + this autumn .
  - Appealing to growers with a wide range of rotations and soil types.
  - Whole host of benefits – some will suit every farm
    - EFA's
    - Soil health – desire to increase Soil Organic matter .
    - Direct drilling / Min till
    - Soil and Nutrient capture -- water companies
    - Introduction / extension of spring cropping
    - Nematode and other soil pest reduction
    - Part of a Blackgrass reduction strategy .
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# Frontier Trial Sites

Nitrogen loss over Winter 2013/14

Average 73 kg N/ha lost Sept–Feb

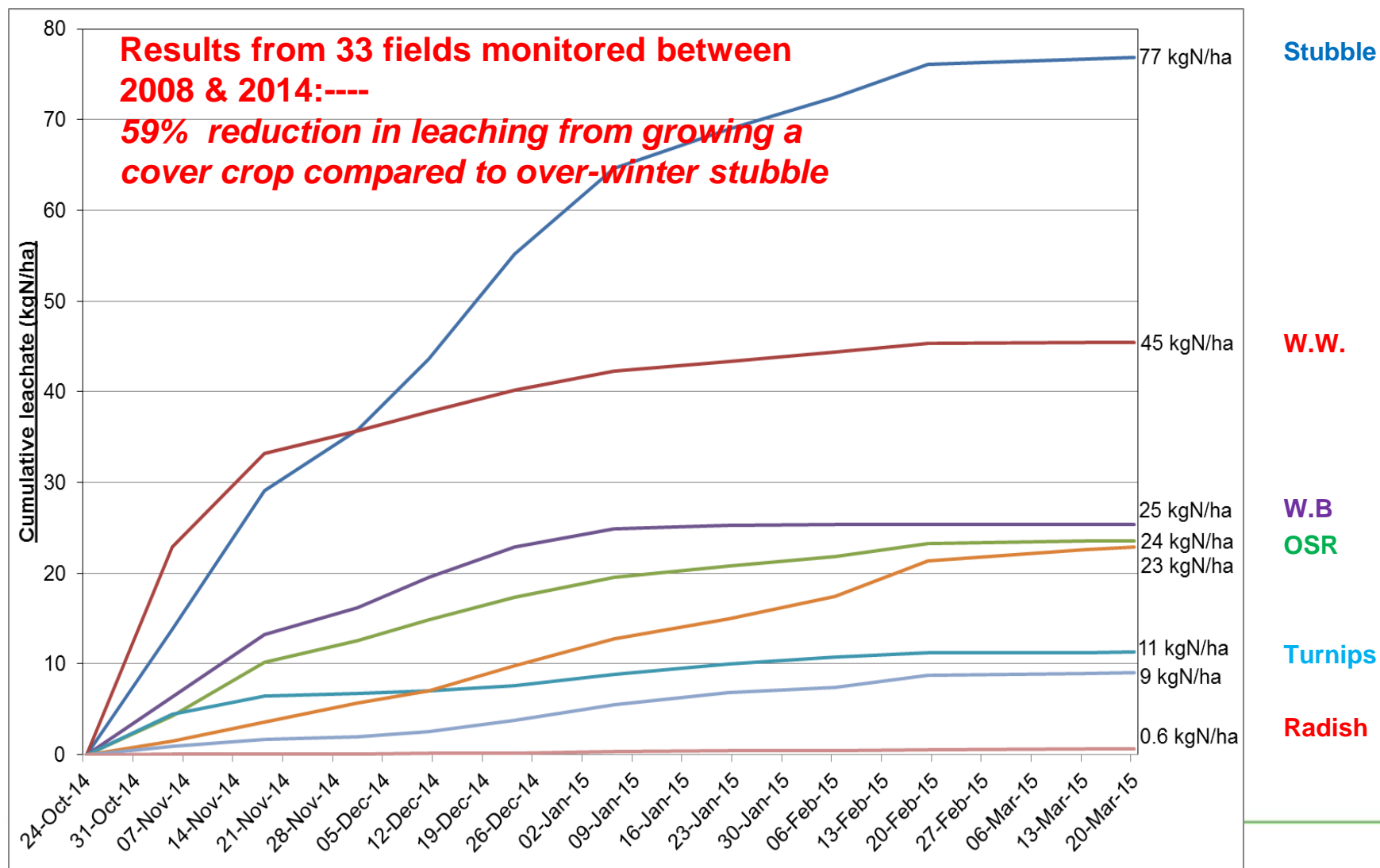


Frontier site (difference between Sept N values and February N values from Soil min N tests)		N loss Kg N /ha
Ormskirk	LANCS	98
Gressenhall	NORFOLK	62
Walsham	SUFFOLK	74
Birch	ESSEX	47
Wrotham	KENT	60
Malshanger	HANTS	42
Blandford	DORSET	130



# Wessex water trial Autumn14 Winter 15

## N loss by Cover crop over 6 months



# Honingham ,Norwich Jan 16



Cover Crop	DM Yield Ton /ha	N capture Kg N ha	P capture Kg P ha	K capture Kg K ha
<b>Rye /Vetch</b>	<b>2.3</b>	<b>59</b>	<b>9</b>	<b>51</b>
<b>Radish /Oat</b> Baracuda	<b>3.2</b>	<b>130</b>	<b>16</b>	<b>85</b>
<b>Radish</b> Defender	<b>4.1</b>	<b>170</b>	<b>21</b>	<b>114</b>
<b>Mustard /Oat</b>	<b>2.1</b>	<b>67</b>	<b>8</b>	<b>54</b>











# Brassica Cover crop roots



Radish A -

Radish B -

Mustard -

Turnip rape





# The 3 essential components.





# What does each bring to a grower--



- Cereal --
    - Fast growth
    - Easy to destroy
    - Disease
    - Soil health improvement
    - Shallow root – tilth maker
    - Cheap
    - Pests
  - Brassica –
    - Very Fast growth
    - Considerable N catch
    - Drainage
    - Pest reduction
    - Deep roots
    - Soil structuring
    - Disease
  - Others –
    - Range of species /types
    - Range of food supply to the soil
    - Range of rooting
    - N fixation
-

# EFA - Catch and Cover crops.



- Both need to be –
- A sown mix of at least 2 species from list—
- **At least 1 cereal –**
- **Rye , Oats , Barley –only**
- **At least 1 Non cereal –**
- **Vetch , Phacelia , Mustard , Oil Radish , Lucerne**
- **Catch crops** –sown by 31<sup>st</sup> August -- left until 1<sup>st</sup> October
- **Cover Crops** –sown by 1<sup>st</sup> October – left until 15<sup>th</sup> Jan 2017
- After EFA period can be grazed or destroyed

# Working with Specialist Brassica breeders -- late drilled





# Same varieties –early drilled



# What is being used :--



- Mixtures 62%
  - Radish alone 26%
  - Vetch 3%
  - Mustard 3%
  - Berseem clover 2%
  - Others 4%
  - -----
  - Oat /Radish mix 27%
  - Soil structure mix 25% Tillage radish / Oil Radish / Cereal x2
  - Rye /Vetch 20%
  - Soil Vitality mix 11% Radish /Legume/Phacelia /Cereal x 3
  - BioFumigation mix 8% Brassica mix x 3
  - Oat /Mustard 6% 3% Others
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## **Radish /Oat mix**

- EFA suitable
- A choice of Radish .
- Great nitrogen catch





# Kings Rye/vetch mix

(or Oat /vetch mix) 20<sup>th</sup> October





# Kings Soil Structure Mix

Radish x 2 / oat x 2 / forage rye / phacelia





# Oil Radish

20<sup>th</sup> October --9 weeks





# Radish –20 days . “The power of the roots “



# A range of Radish varieties .



	Siletina	Colonel	Siletta Nova <b>NEW</b>	Dacapo	Defender	Baracuda <b>NEW</b>
	Not BCN	BCN 1  Key for BCN	Not BCN  Late flower	BCN 2  Safe in a Beet rotation	BCN 2 Multi res.  Not just BCN  Bio-Fum.	BCN 2  Fast growth /fast soil cover
German rec. List Flowering 1=late 9=ear	6	5	4	4	3	3
Days to Flower	55	66	72	74	76	78
Probability August 15 <sup>th</sup> sow	80%	63%	30%	30%	18%	15%
£ kilo	2.05	2.50	2.10	2.35	3.20	2.35



# Crop Termination

## Influences the weed issue



Cover crop type / Geography / Soil type

Current favourite = Glyphosate

- Flail and incorporate .
  - Incorporate alone
  - Graze with livestock .
  - Crimper roll
  - Frost .
  - Other Herbicides
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# Cover crop termination— Needs careful thought .





# Cover crop mixture

November - Planted 4<sup>th</sup> Sept





# Glyphosate – 10<sup>th</sup> Feb

4 weeks later = 15<sup>th</sup> March





# Direct drill spring barley

15<sup>th</sup> March into the cover crop





**8<sup>th</sup> May**

Harvest = 9.28 ton/ha





# Front Flail and Plough .





# Grazing opportunity --





# Wheat direct drilled into Cover crops





**Thank you**

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