SUSTAINABLE FARMING

GWCT THE ALLERTON PROJECT

NIAB

ECAF
European Conservation Agriculture Federation

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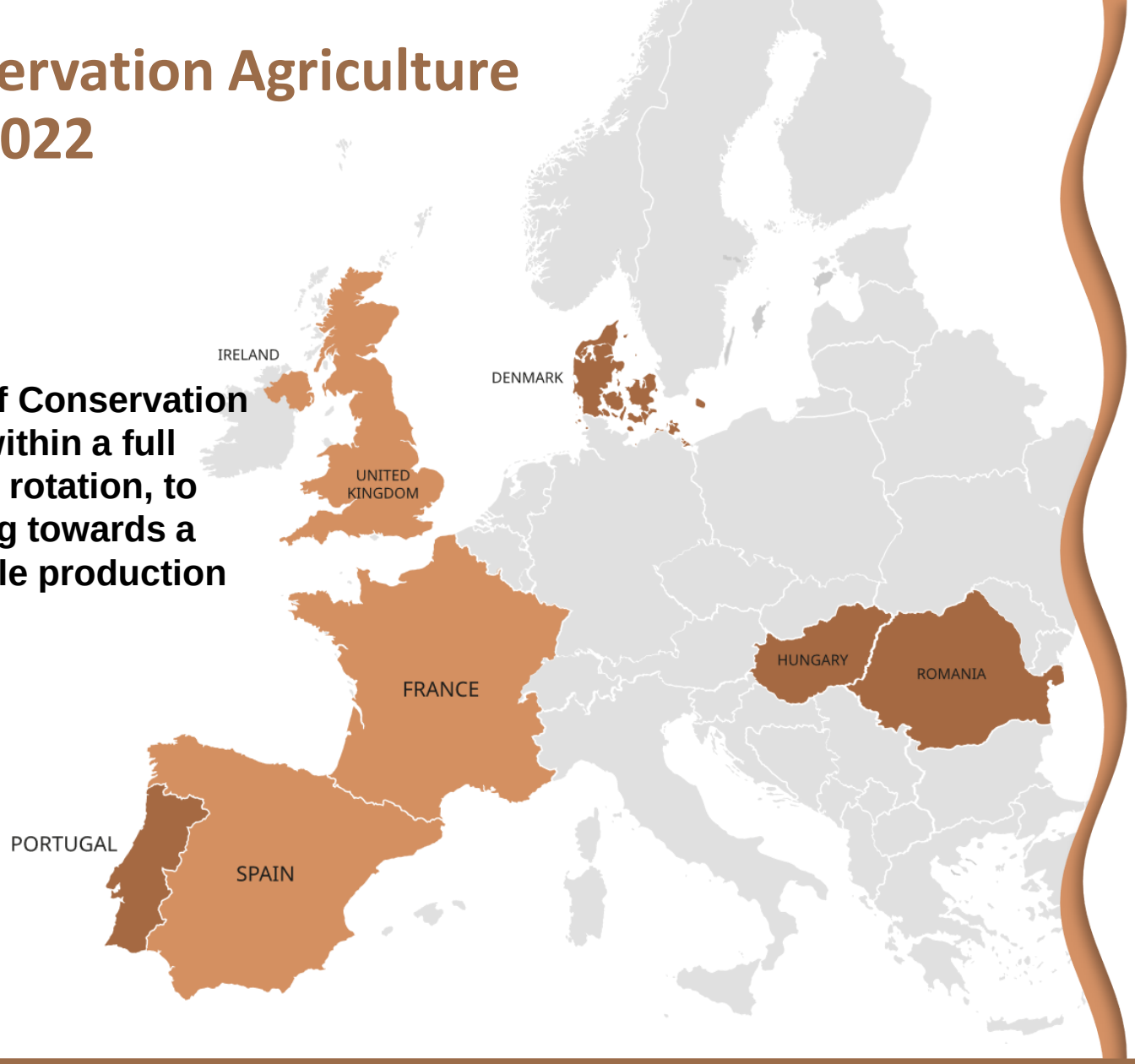
European Conservation Agriculture project: 2017-2022

Purpose of study

A five year evaluation of Conservation Agriculture principles within a full cereals-based cropping rotation, to support growers moving towards a more reliable sustainable production system.



SUSTAINABLE FARMING

GWCT THE ALLERTON PROJECT

AEAC.SV Asociación Española Agricultura de Conservación Suelos Vivos

NIAB

SAJA SEVILLA

ECAF European Conservation Agriculture Federation

ejvn Qualité des Sols & Performance des Agrosystèmes

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Conservation Agriculture project: UK sites

SUSTAINABLE FARMING

Loddington

Joe Stanley

Head of Training & Partnerships – The Allerton Project

Lenham

Andy Barr

Farmer, Kent

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Conservation Agriculture project: Three systems

SUSTAINABLE FARMING

Conventional:
15-20 cm depth inversion cultivation

Sustainable System 1:
10-15 cm depth non-inversion cultivation + cover crops

Sustainable System 2:
0-10 cm depth light cultivation / DD + cover crops

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Field rotation

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Loddington Fields	Crop				
	2018	2019	2020	2021	2022
Cawthorn	Winter Barley	Winter OSR	Spring Wheat	Spring Beans	Winter Wheat
Upper Pond North	Winter OSR	Winter Wheat	Spring Beans	Spring Wheat	Spring Barley
Cabins South	Spring Beans	Winter Wheat	Spring Barley	Winter OSR	Winter Wheat
Holloways	Winter Wheat	Spring Beans	Spring Wheat	Winter Barley	Winter OSR
Collie Top	Winter Wheat	Winter Barley	Spring Oats	Spring Wheat	Spring Beans

Lenham Fields	Crop			
	2019	2020	2021	2022
Cherry Gardens	Winter OSR	Winter Wheat	Spring Barley	Spring Peas
Oak Tree	Winter Wheat	Spring Barley	Spring Peas	Winter Wheat
Finger Post	Spring Beans	Winter Wheat	Winter OSR	Winter Wheat
Top Hill	Spring Barley	Spring Beans	Winter Wheat	Winter OSR

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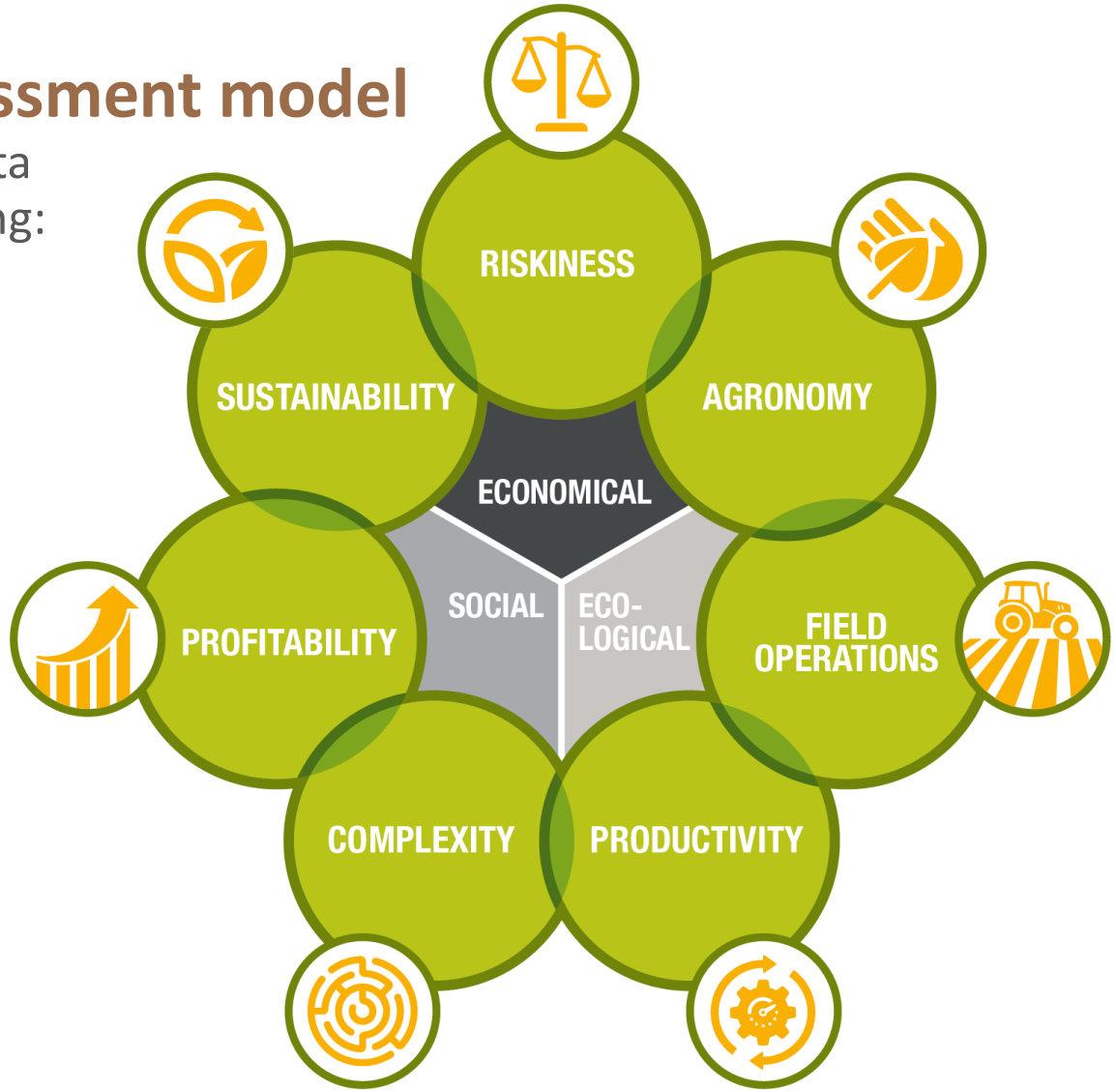
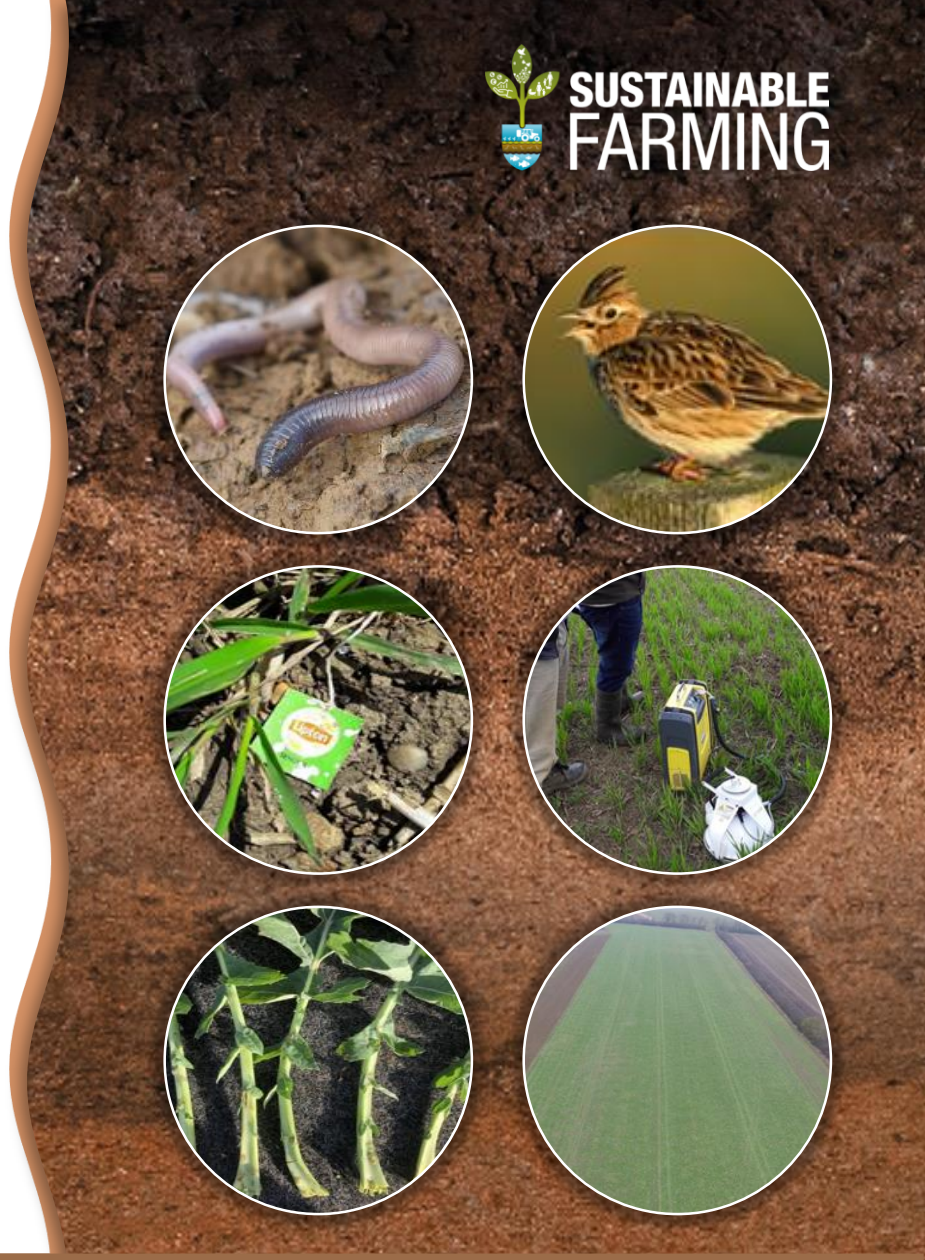
Value assessment model

Over 80,000 data points measuring:





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Earthworms

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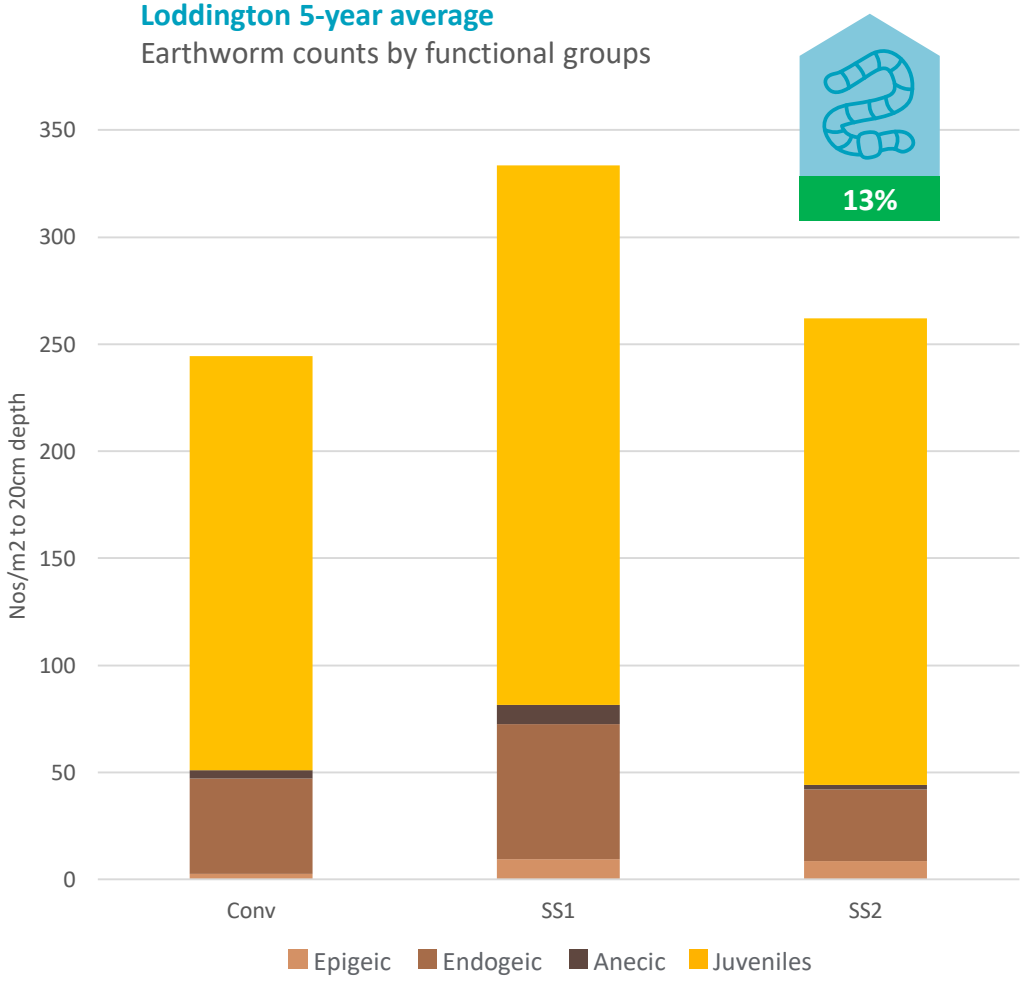
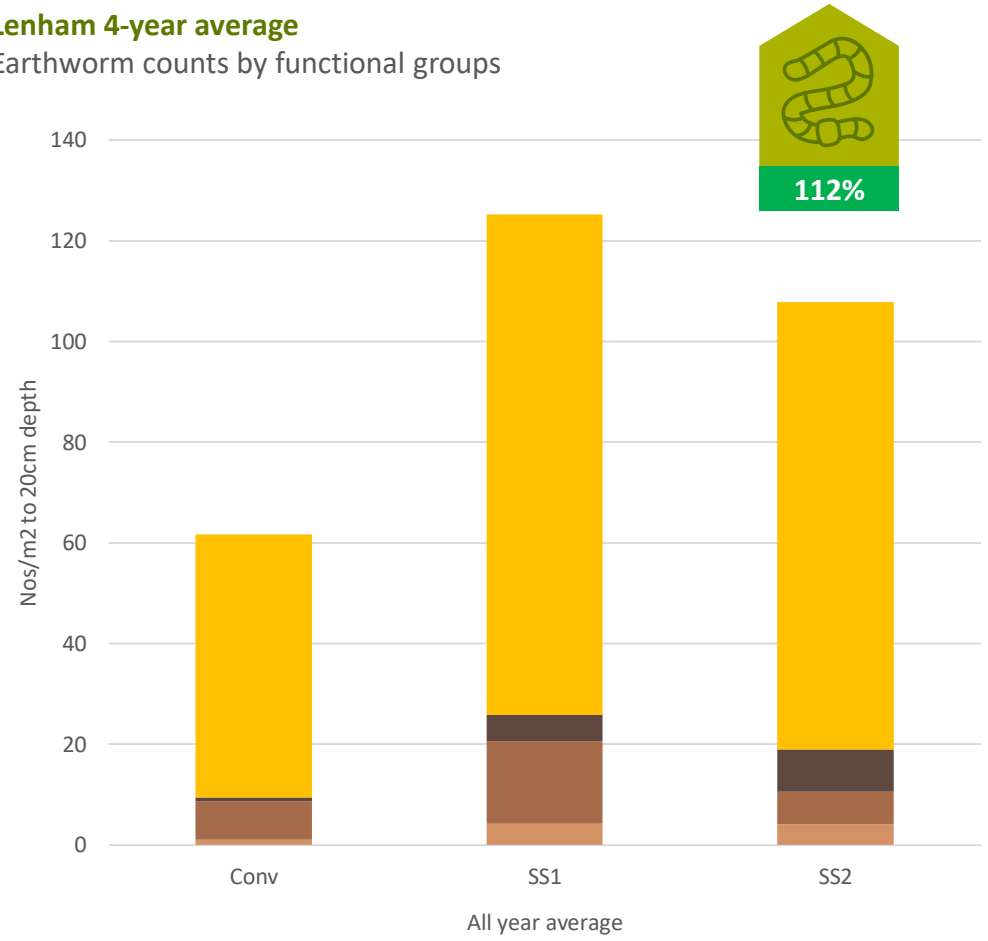
Loddington 5-year average

Earthworm counts by functional groups



Lenham 4-year average

Earthworm counts by functional groups



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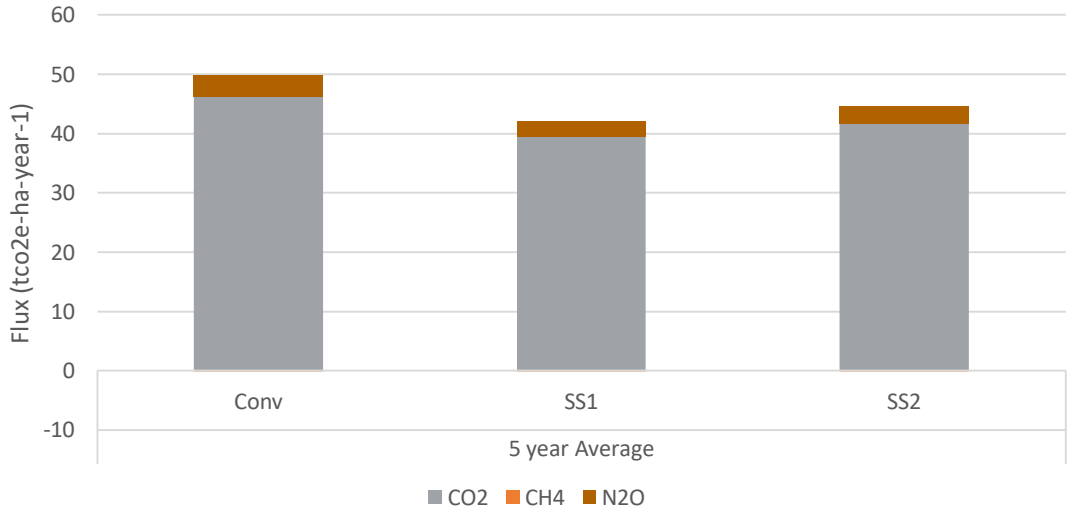
Soil Greenhouse gas emissions

SUSTAINABLE FARMING

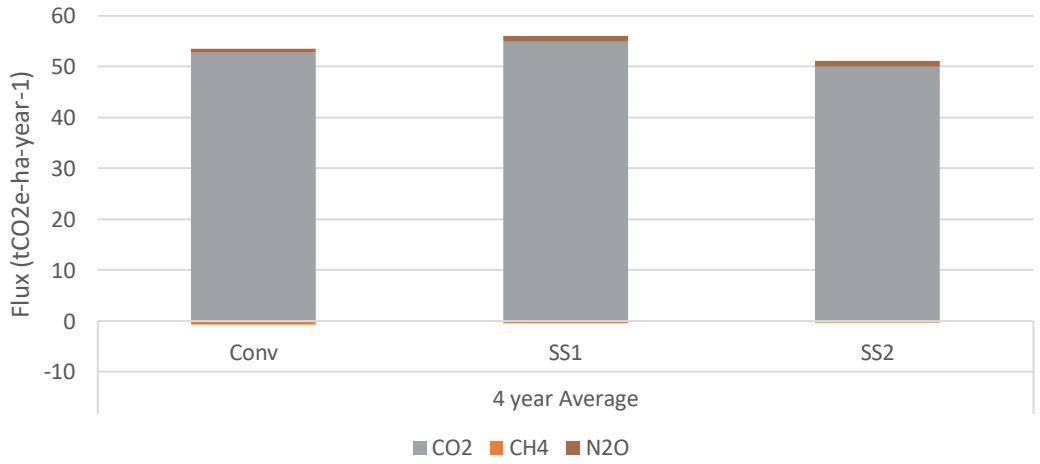
8%

Loddington - 5 year average flux (t/ha/year)

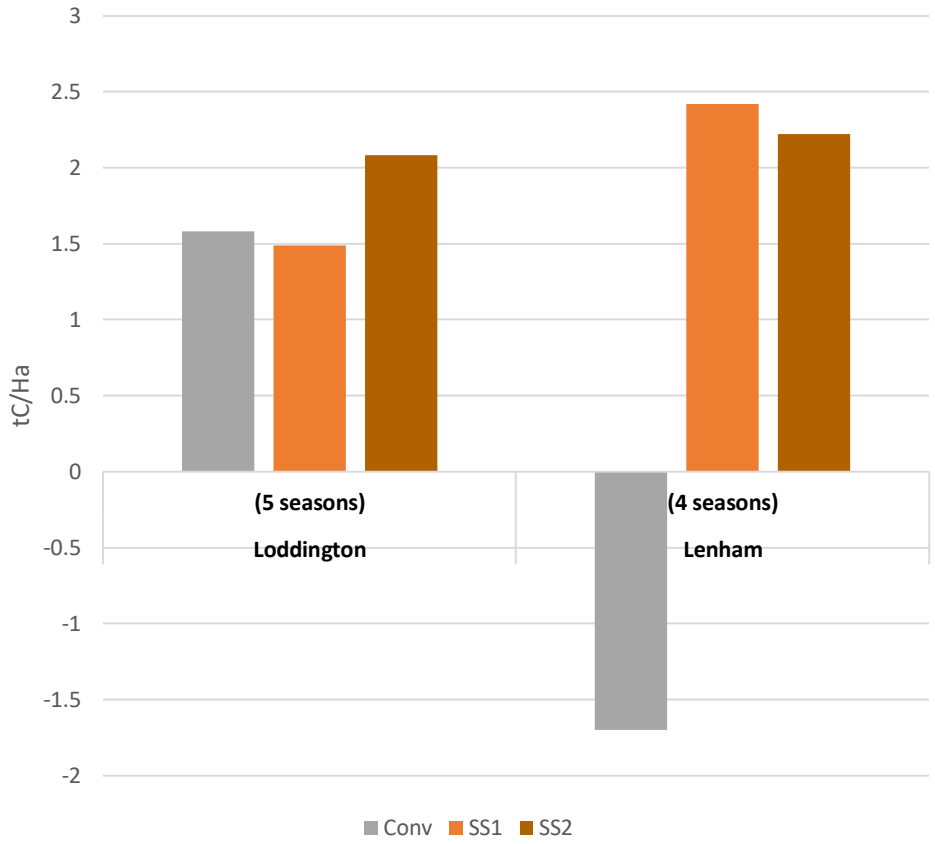


5%

Lenham - 4 year average flux (t/ha/year)



Carbon sequestration rate (tC/ha/year) based on Soil Organic Carbon Measurements



Assuming a CO_2 equivalent of 21x for methane and 296x for Nitrous oxide.

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Crop productivity

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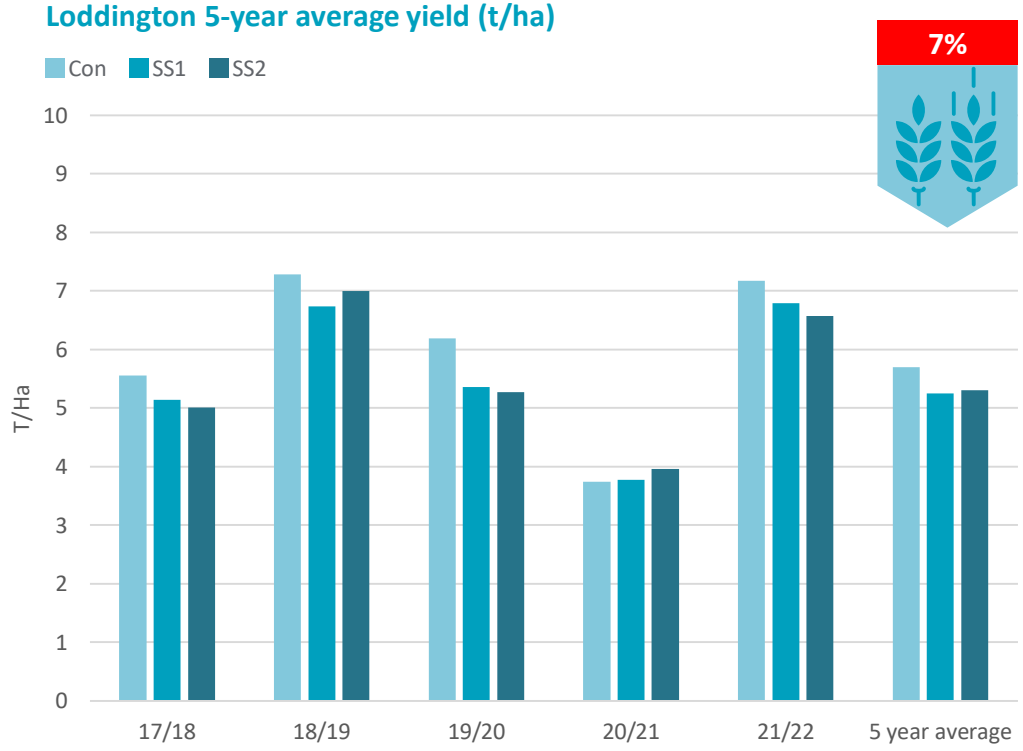
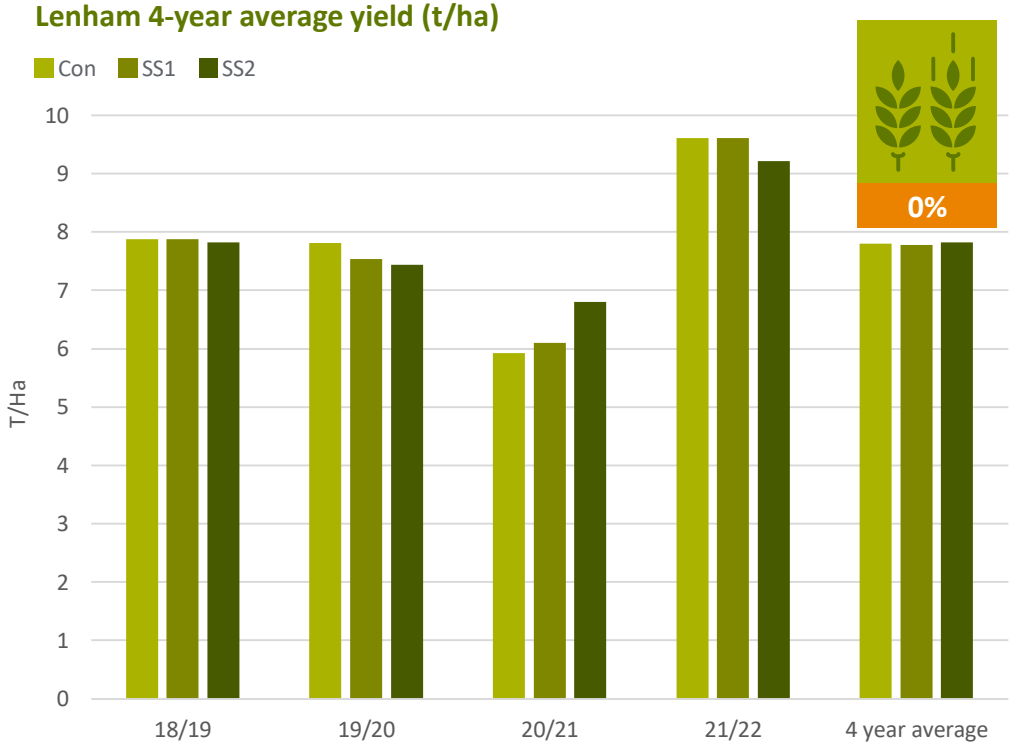
Loddington 5-year average yield (t/ha)



Lenham 4-year average yield (t/ha)



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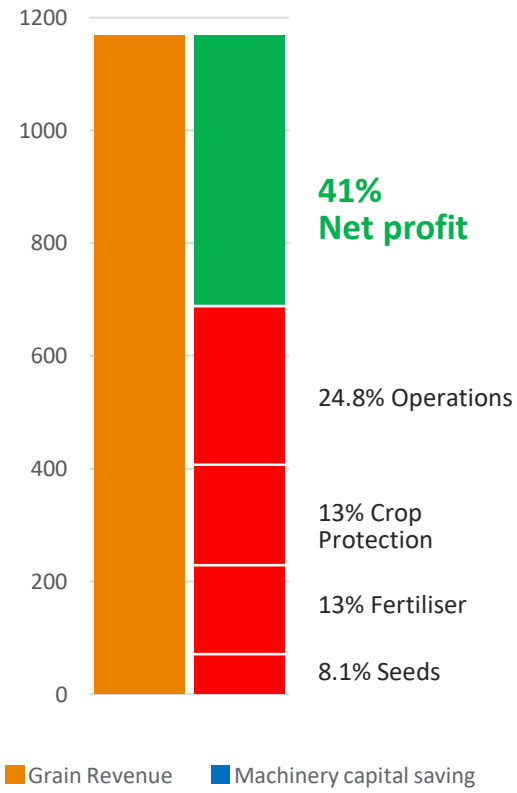
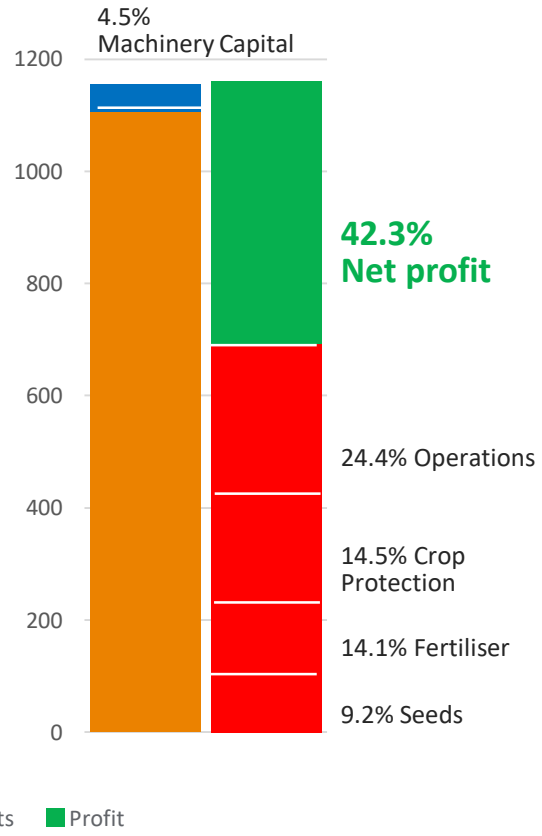
Profitability (£/ha): Loddington

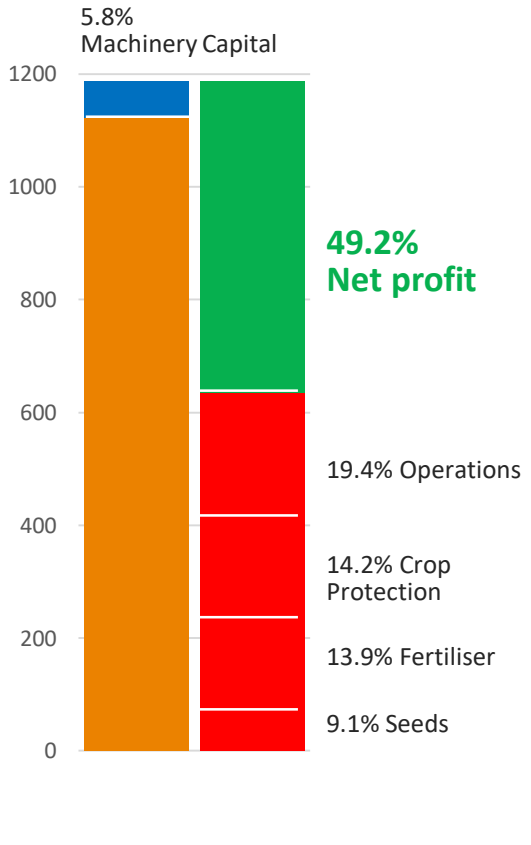
Conventional System
5-year average cost breakdown



Sustainable System 1
5-year average cost breakdown with machinery cost savings



Sustainable System 2
5-year average cost breakdown with machinery cost savings

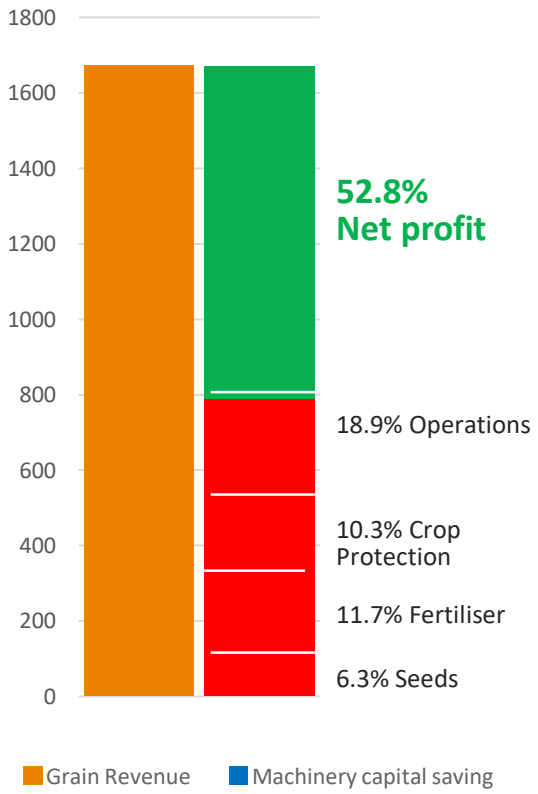


Grain Revenue | Machinery capital saving | Costs | Profit

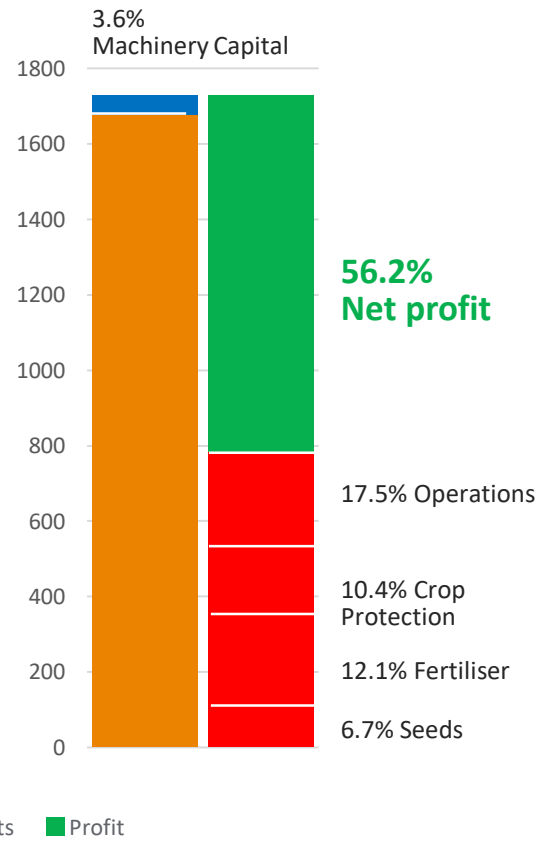
Net profit:
Capital cost savings SS1 = £50/ha, SS2 = £65/ha compared to Conventional when spreading capital costs over 5 years

Profitability (£/ha): Lenham

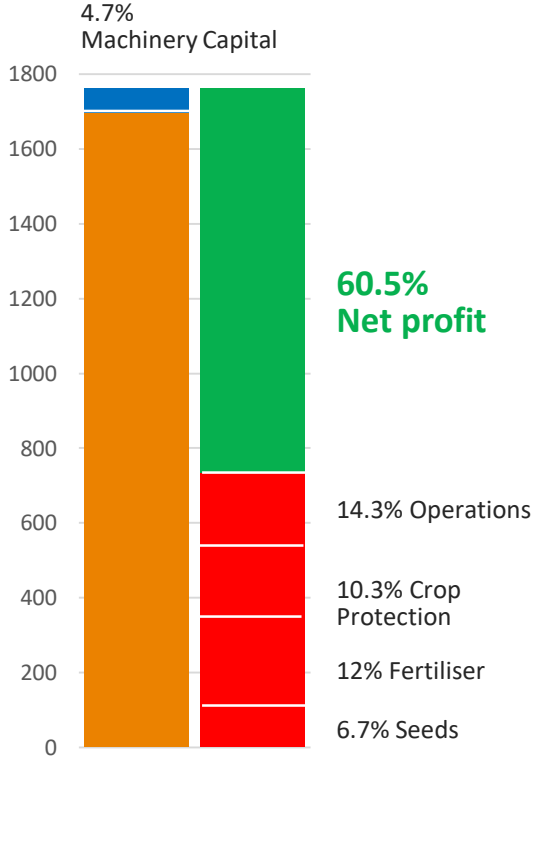
Conventional System
4-year average cost breakdown



Sustainable System 1
4-year average cost breakdown with machinery cost savings



Sustainable System 2
4-year average cost breakdown with machinery cost savings

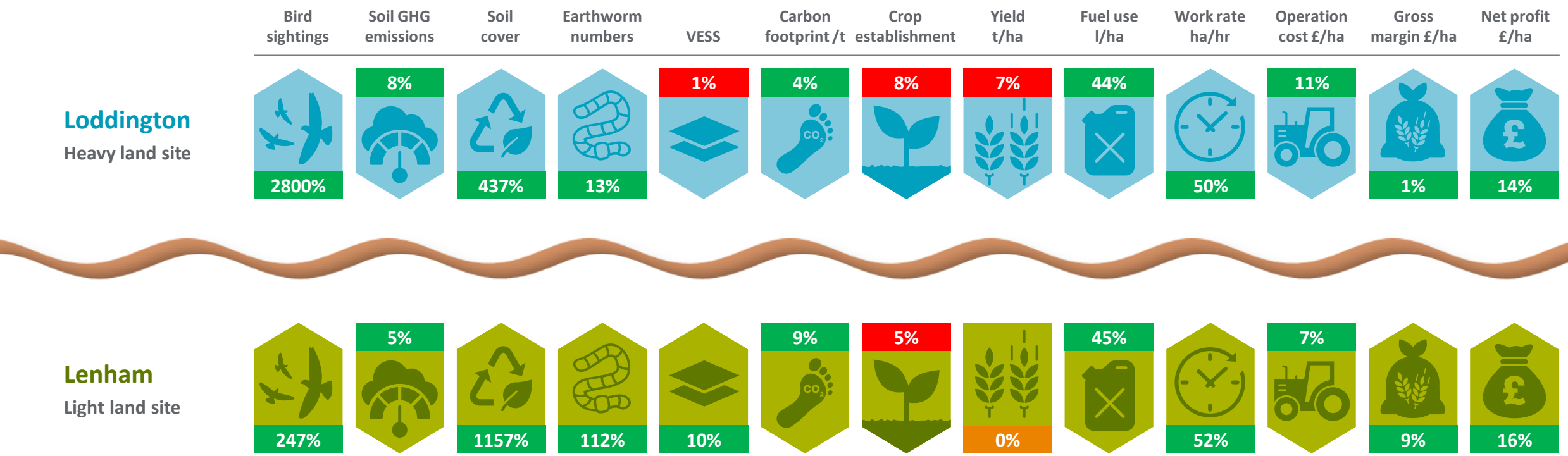


Net profit:
Capital cost savings SS1 = £50/ha, SS2 = £65/ha compared to Conventional when spreading capital costs over 5 years

Syngenta 5-year summary UK

SUSTAINABLE FARMING

All results are comparing Sustainable System 2 (direct drill / light till) against the Conventional System (plough) averaged across the seasons (Loddington 5 years and Lenham 4 years)



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