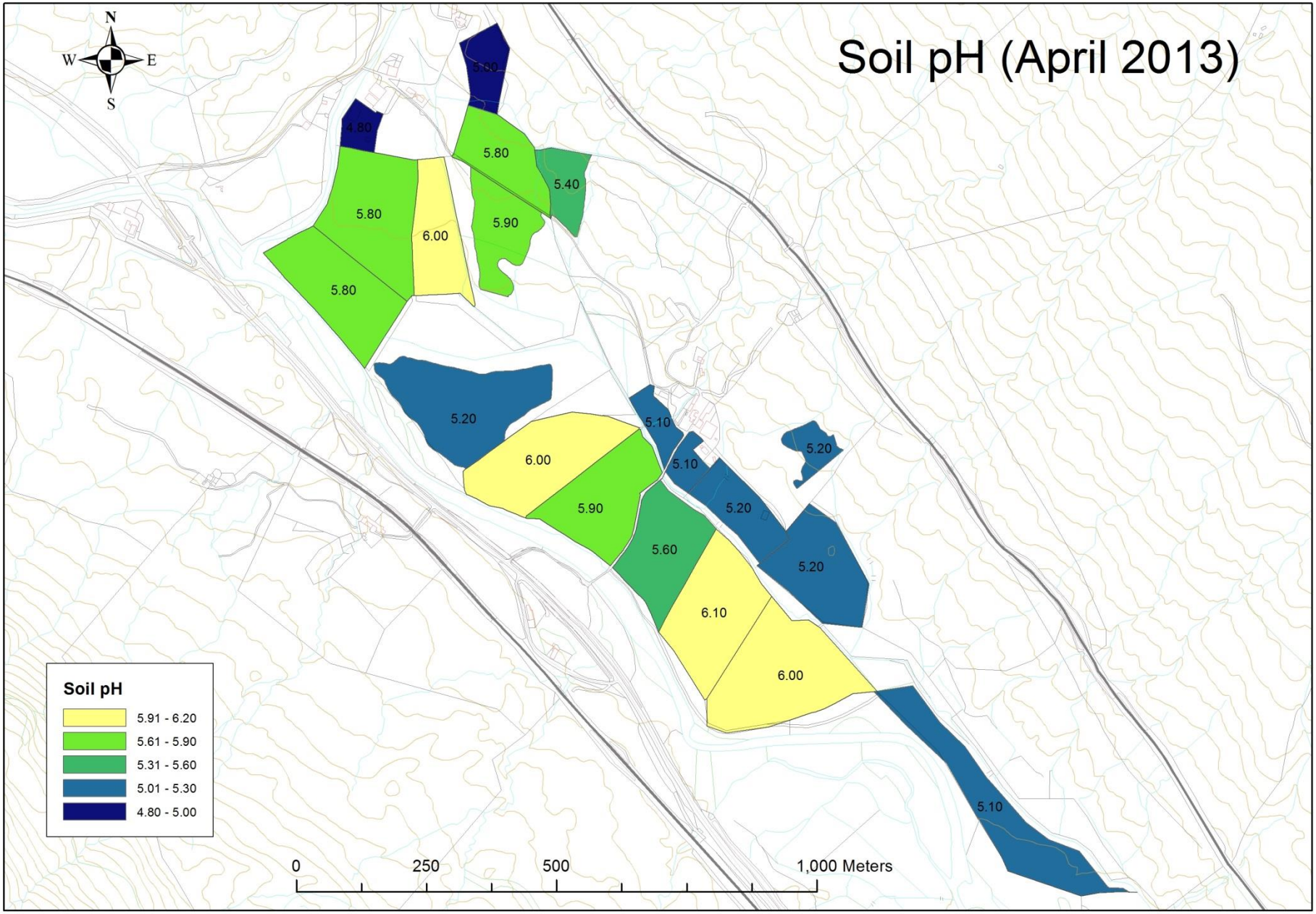
Soils, Re-seeding and Grassland Improvement Programme

John Holland



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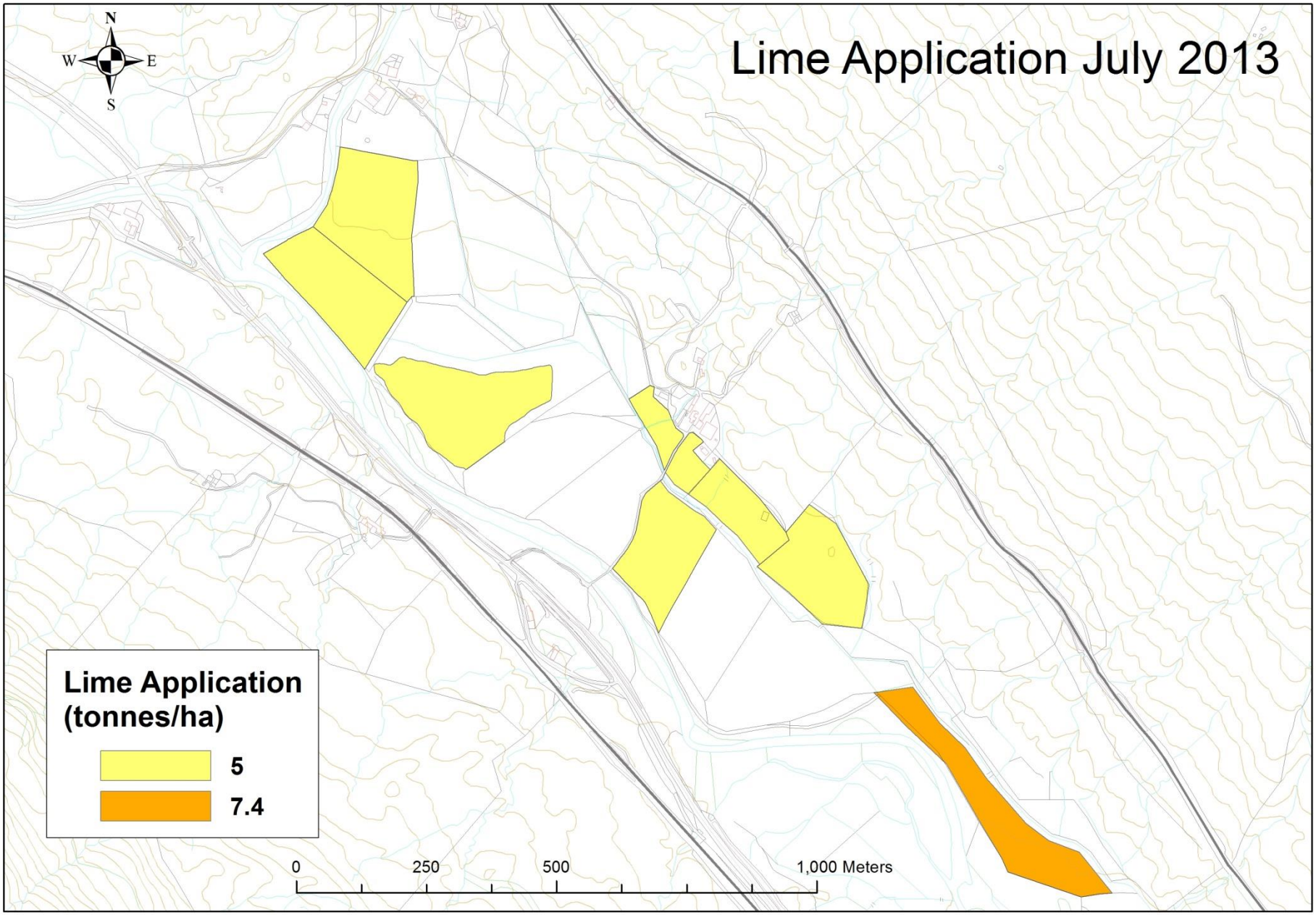

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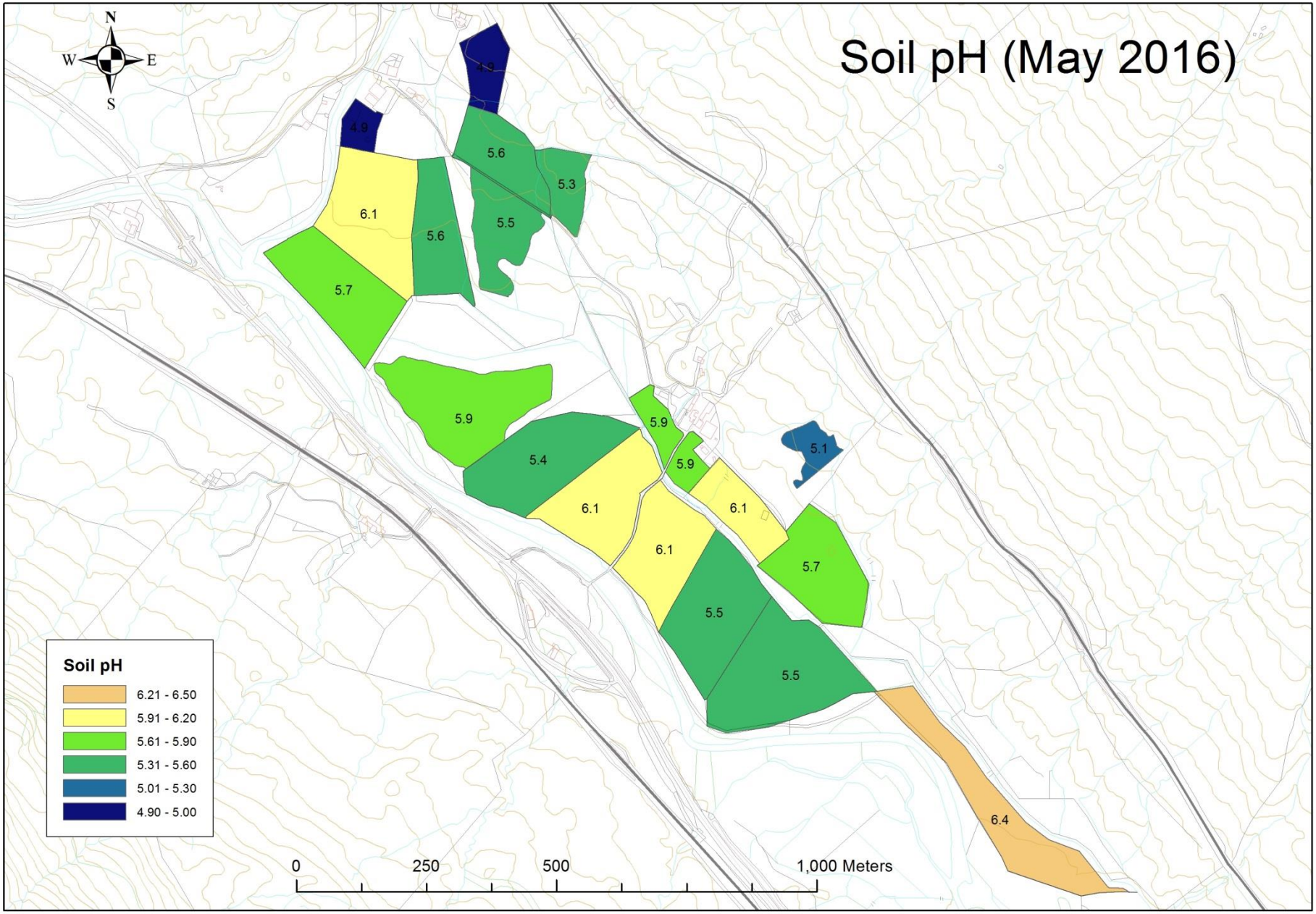

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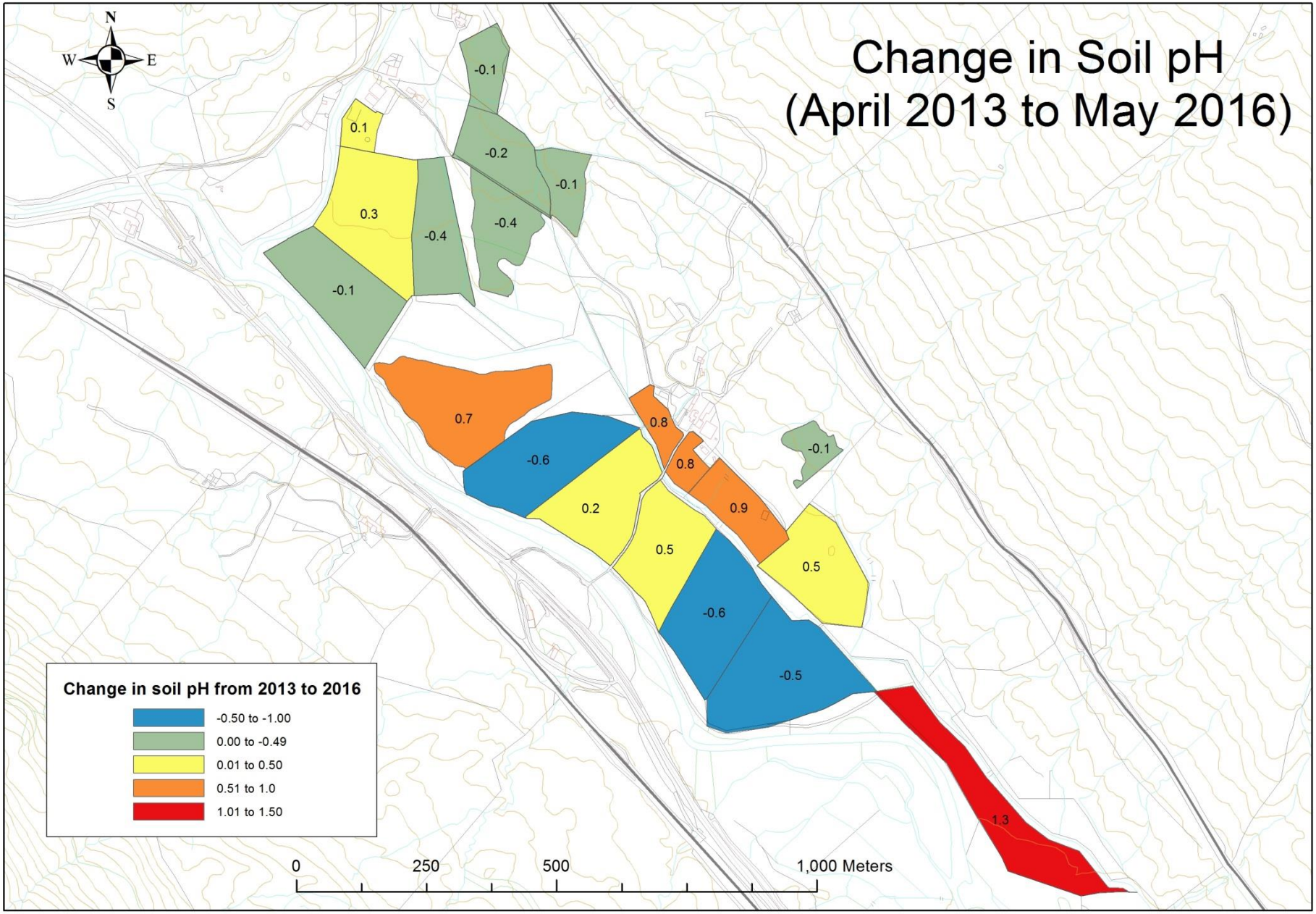

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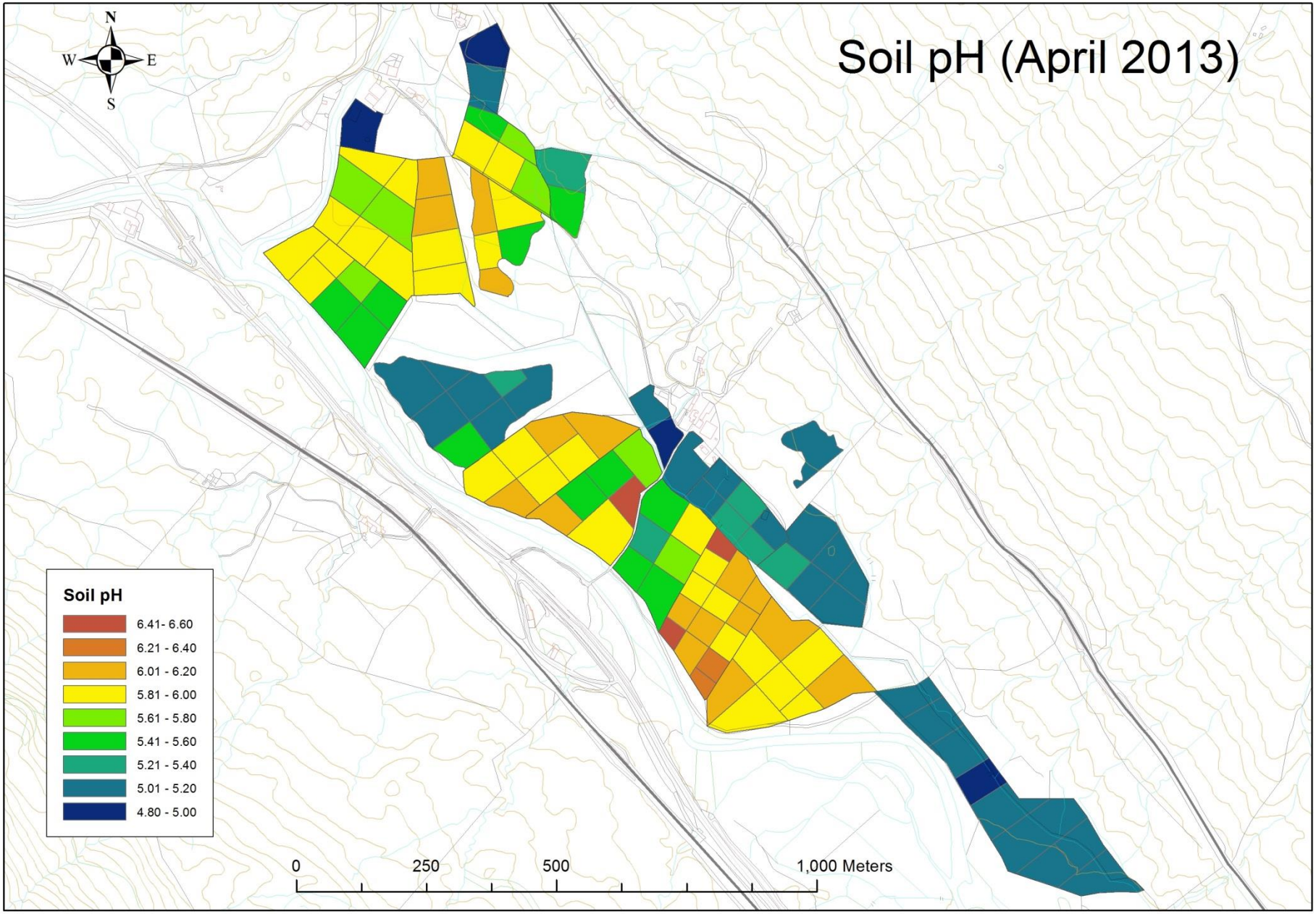

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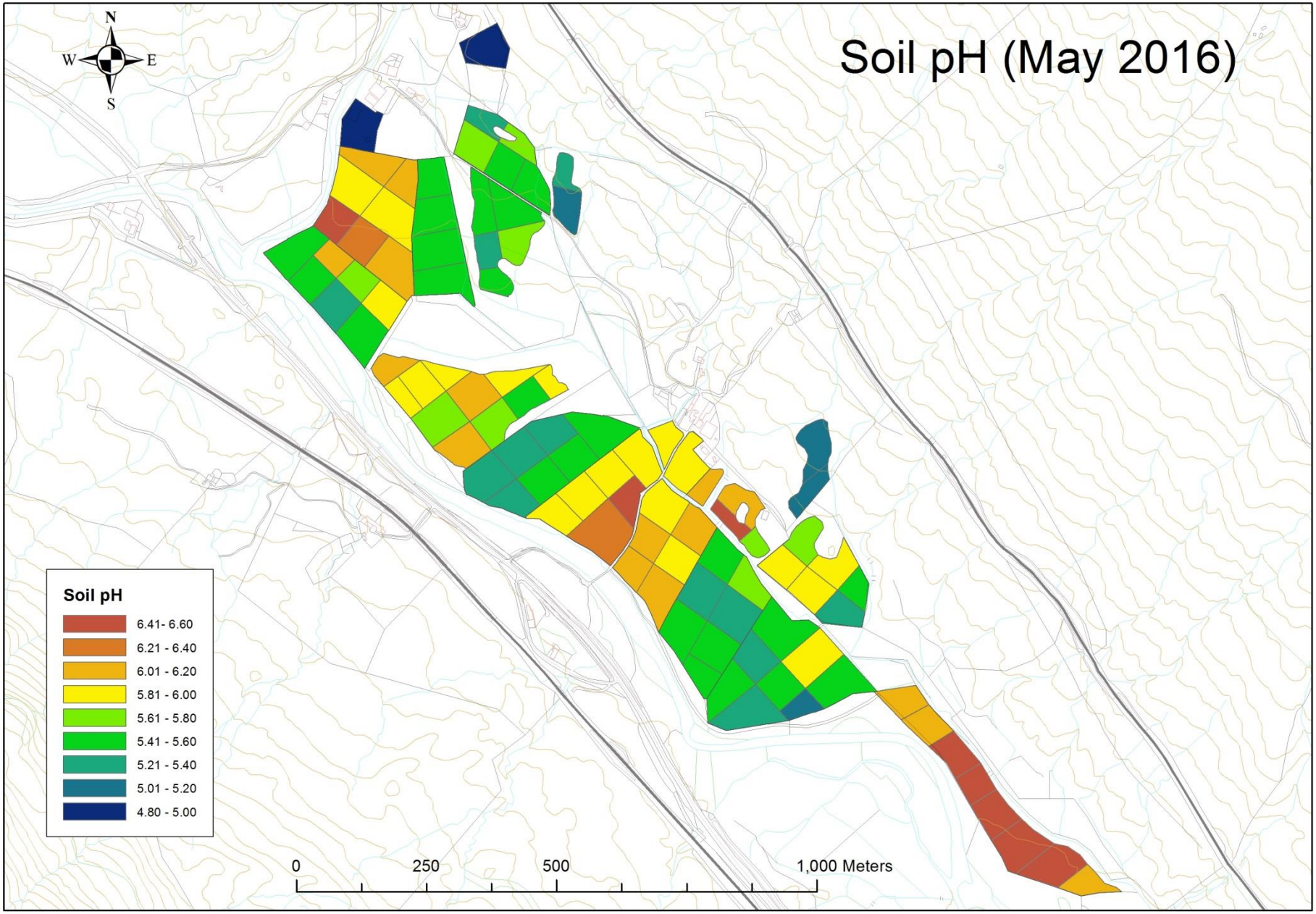

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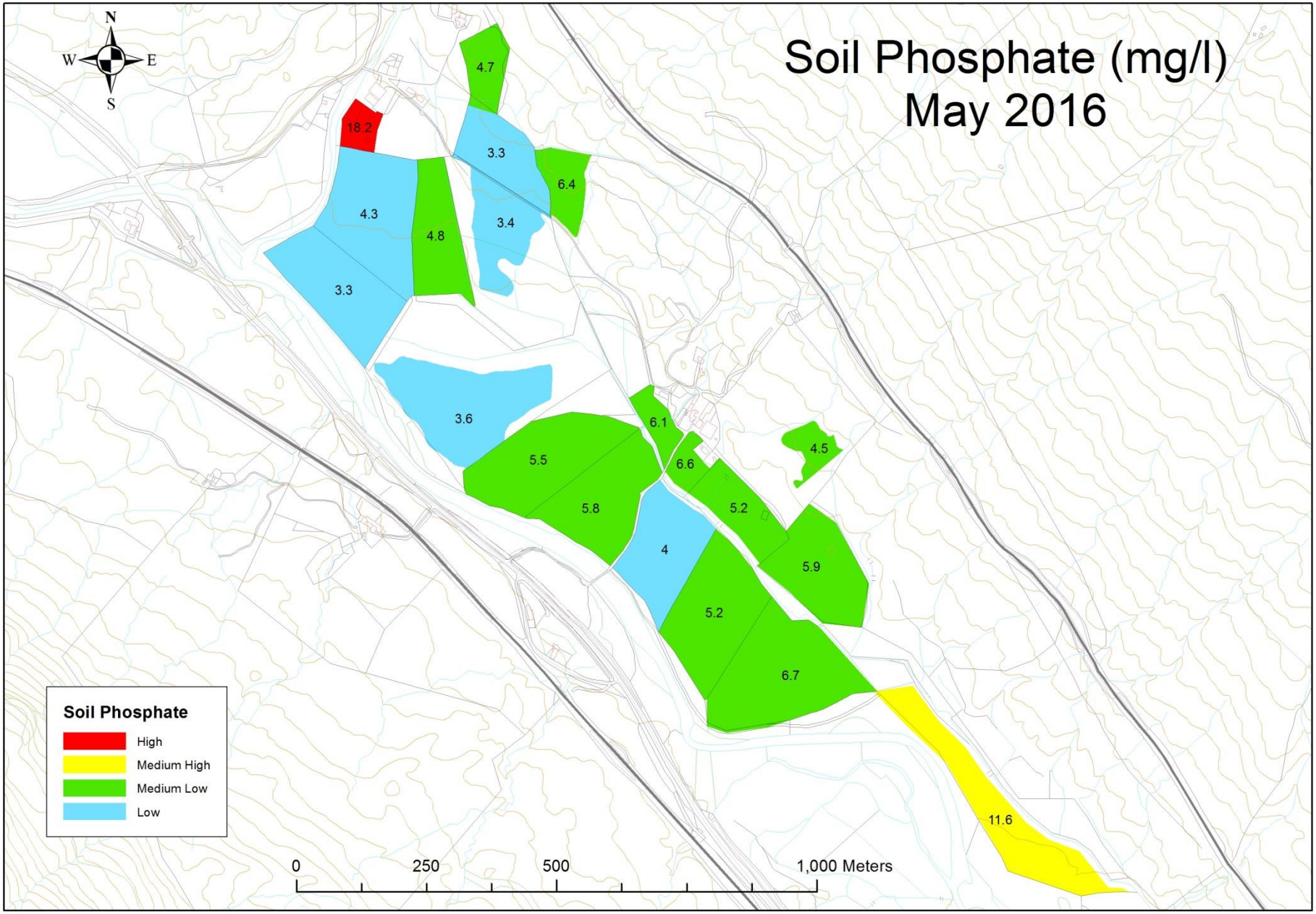

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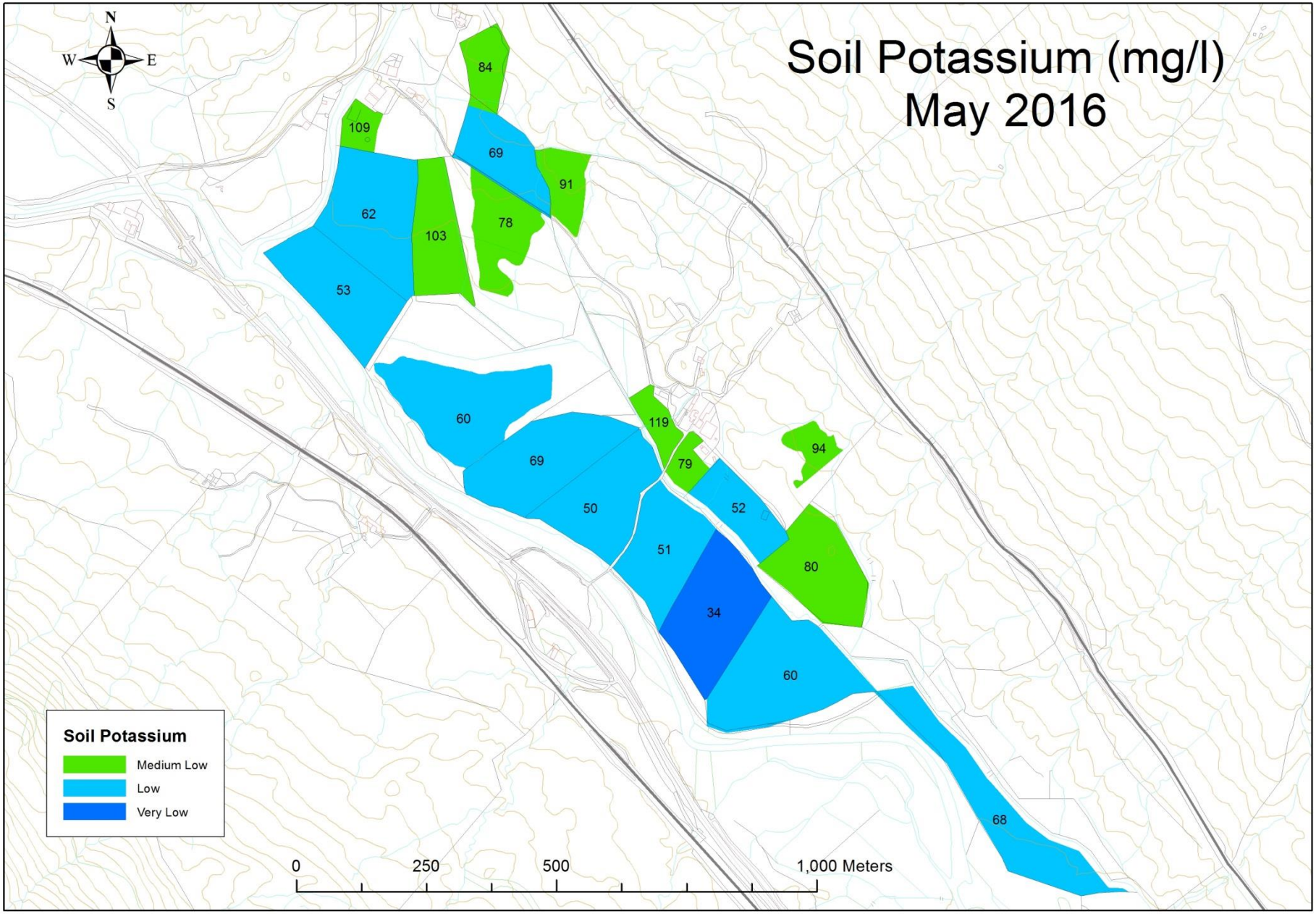

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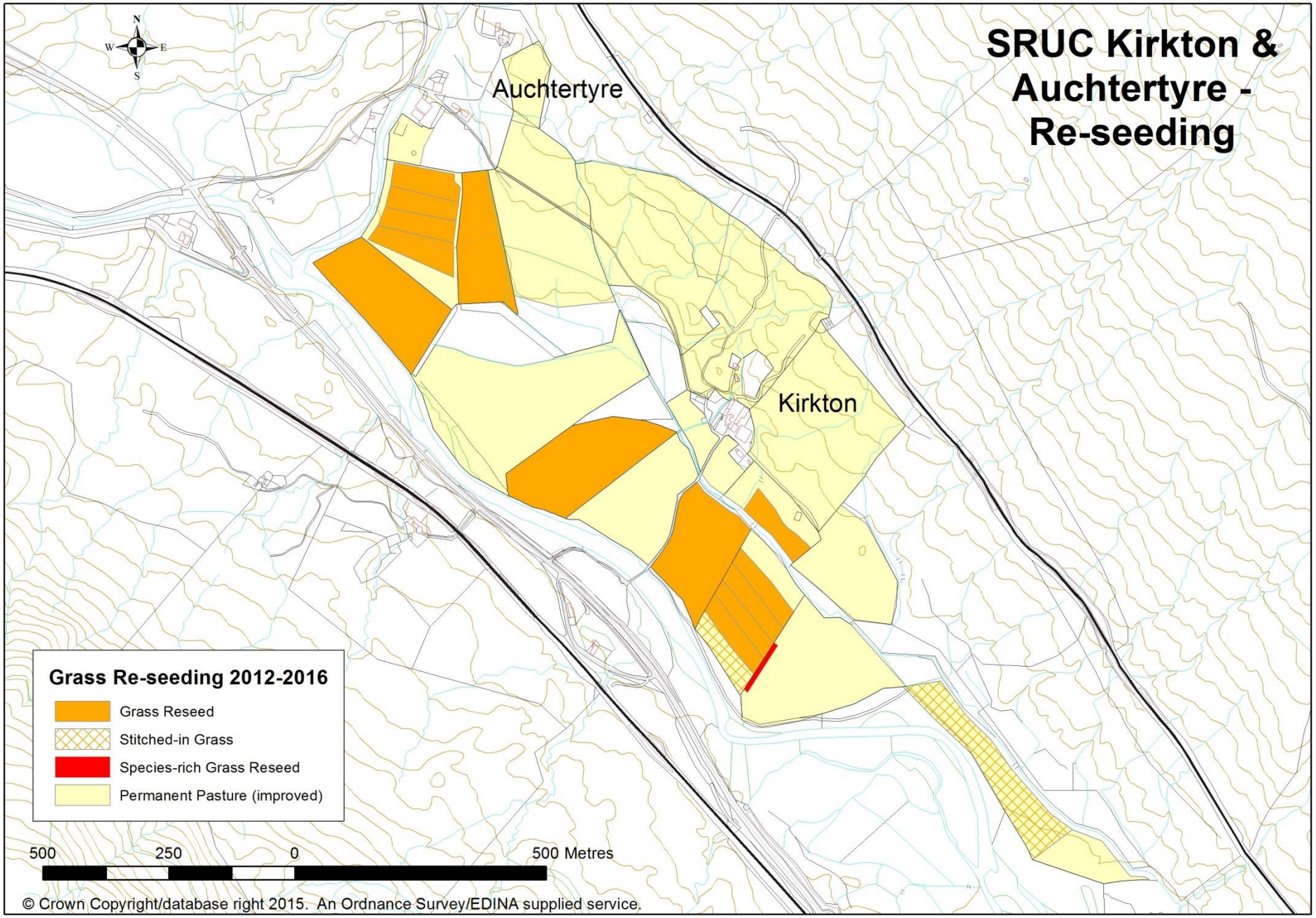
SRUC Kirkton & Auchtertyre - Re-seeding
N
W
E
S
Auchtertyre
Kirkton
Grass Re-seeding 2012-2016
Grass Reseed
Stitched-in Grass
Species-rich Grass Reseed
Permanent Pasture (improved)
500
250
0
500 Metres
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Auchtertyre Reseed (2012 and 2013)

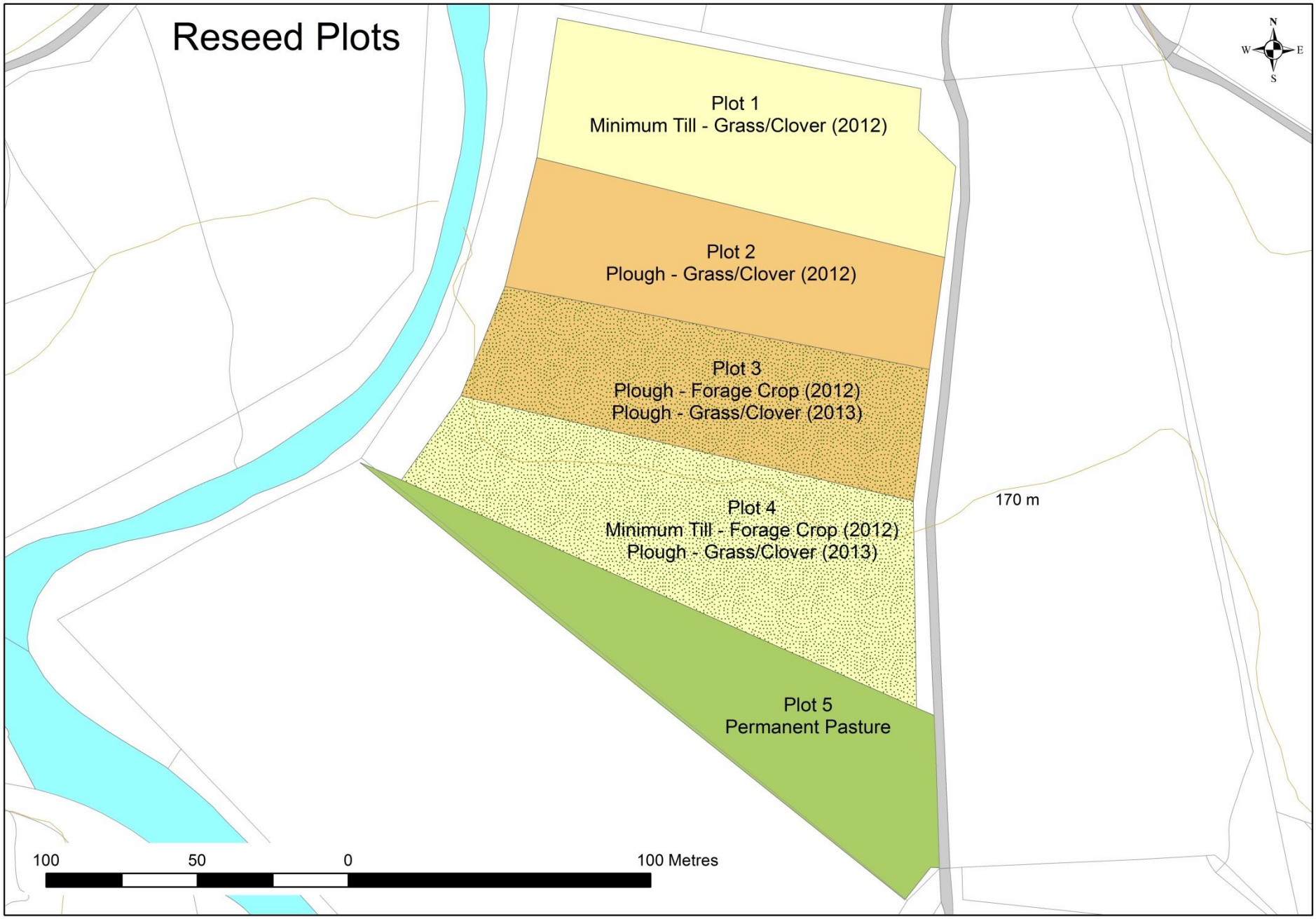
Grass/Clover mix - ‘Mingary’ (John Watson Seeds Ltd.)

Species/Variety	Variety	Percentage
Perennial Rye Grass - *Lolium perenne*	Twymax (Late Tet.)	20
Perennial Rye Grass - *Lolium perenne*	Foxtrot (Late Dip.)	15.33
Perennial Rye Grass - *Lolium perenne*	AberBite (Late Tet.)	10
Timothy - *Phleum pratense*	Comer	8.66
Perennial Rye Grass - *Lolium perenne*	Bree (Int. Dip.)	6.67
Perennial Rye Grass - *Lolium perenne*	AberMagic (Int. Dip.)	6.67
Perennial Rye Grass - *Lolium perenne*	Calibra (Int. Tet.)	6.67
Perennial Rye Grass - *Lolium perenne*	AberAvon (Late Dip.)	6.67
Perennial Rye Grass - *Lolium perenne*	Mezquita (Late Dip.)	6.67
Meadow Fescue - *Festuca pratensis*	Cosmolit	6.67
White Clover - *Trifolium repens*	Merwi	2.4
White Clover - *Trifolium repens*	Crusader	1.8
White Clover - *Trifolium repens*	Rivendel	1.2
White Clover - *Trifolium repens*	S184	0.3
White Clover - *Trifolium repens*	Ronny	0.3

Kirkton Reseed (2013 and 2015)

Grass/Clover mix - ‘Clyde Agriculture (Seeds) Ltd.

Species/Variety	Variety	Percentage
Perennial Rye Grass - *Lolium perenne*	Dundrum (Tet.)	19.61
Perennial Rye Grass - *Lolium perenne*	Pastour (Dip.)	15.03
Cocksfoot - *Dactylis glomerata*	Sparta	11.76
Timothy - *Phleum pratense*	Scots	8.50
Perennial Rye Grass - *Lolium perenne*	Bree (Int. Dip.)	6.54
Perennial Rye Grass - *Lolium perenne*	AberMagic (Int. Dip.)	6.54
Perennial Rye Grass - *Lolium perenne*	Dunluce (Tet.)	6.54
Perennial Rye Grass - *Lolium perenne*	AberAvon (Late Dip.)	6.54
Perennial Rye Grass - *Lolium perenne*	Eurostar (Tet.)	6.54
Red Fescue - *Festuca rubra*	Maxima	6.54
White Clover - *Trifolium repens*	Avoca	2.29
White Clover - *Trifolium repens*	Crusader	2.29
White Clover - *Trifolium repens*	S184	1.31



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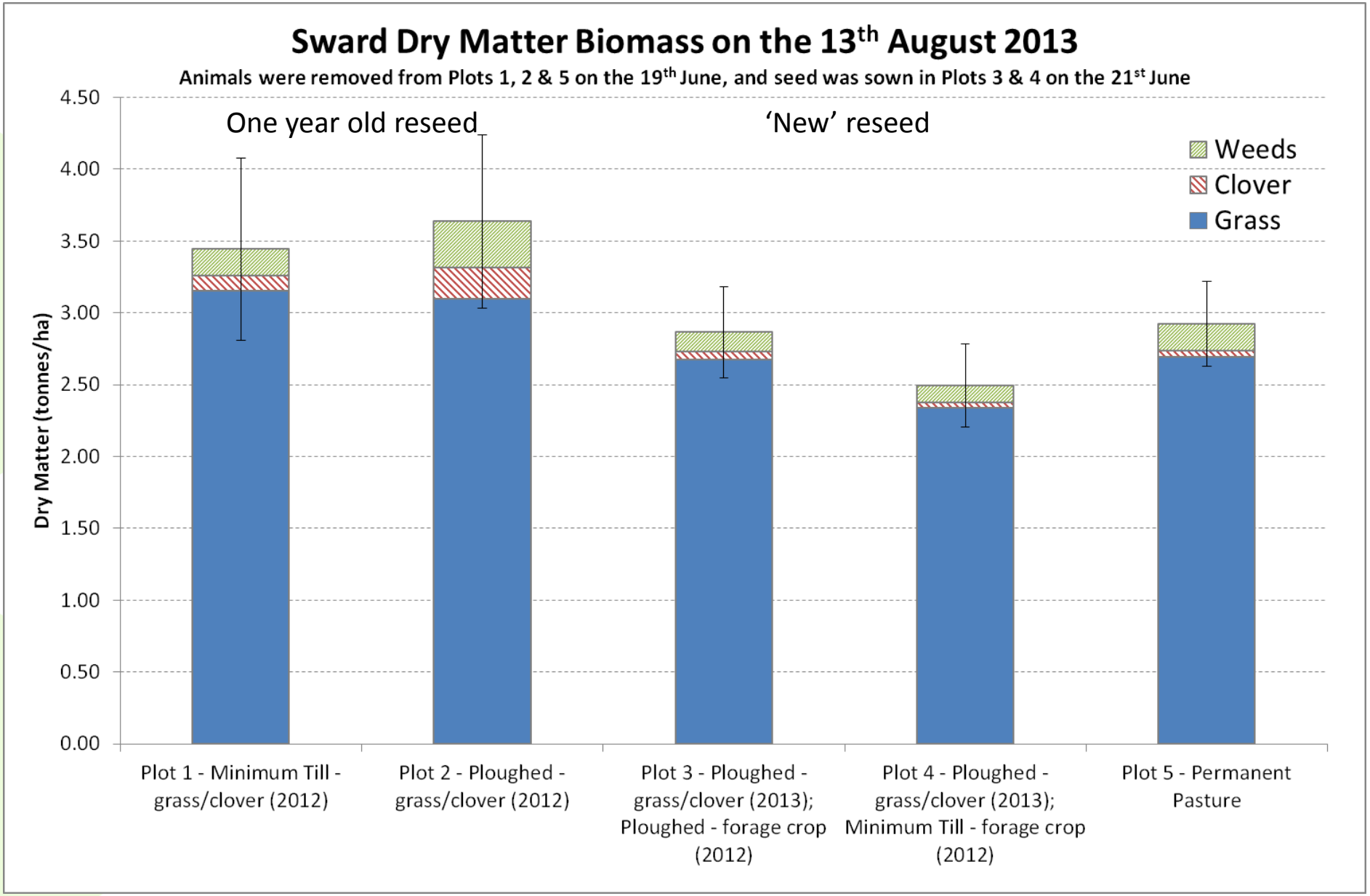
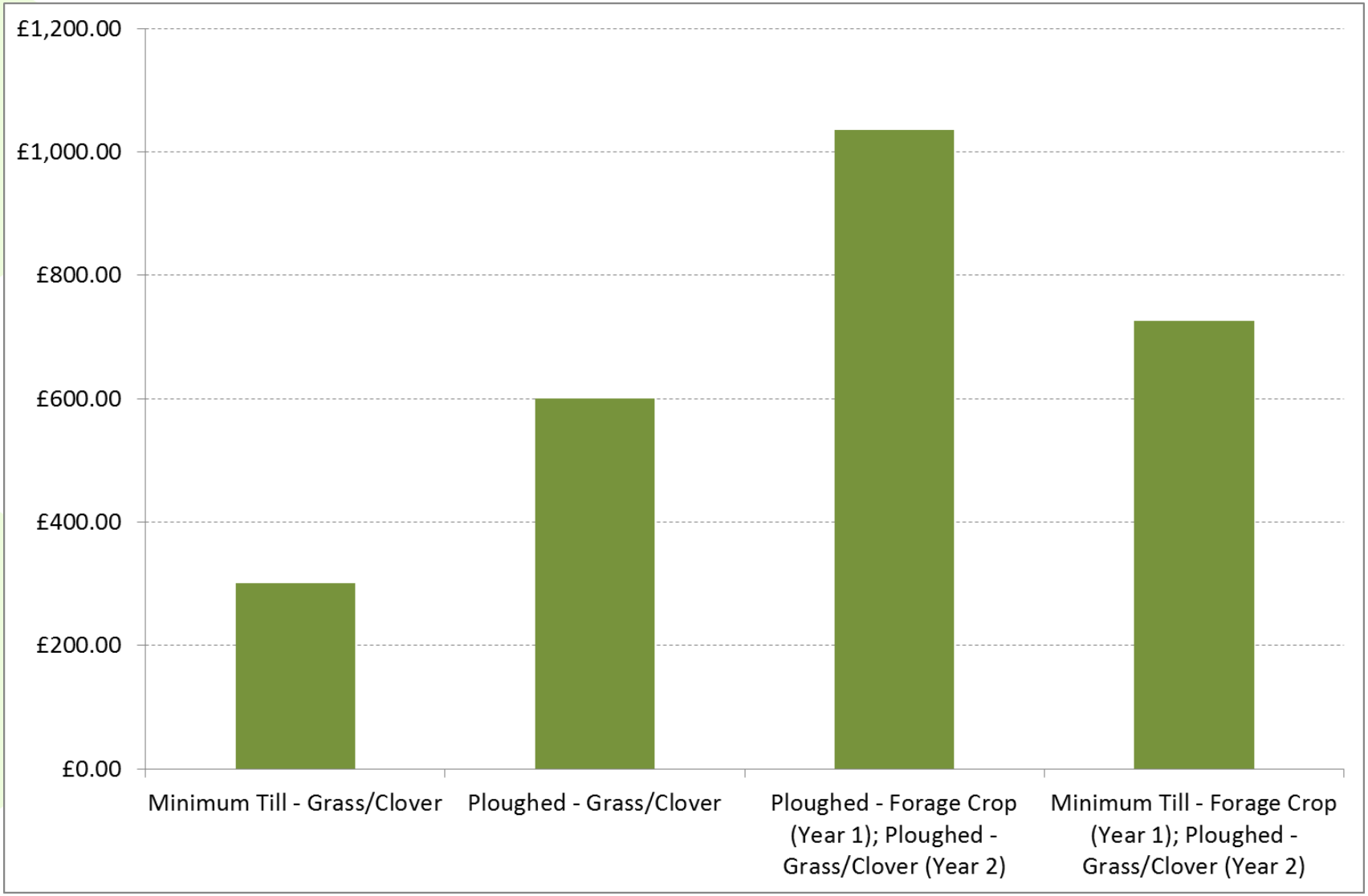
Cumulative N_2O flux - June 2012 - June 2013

Plot	Cumulative N_2O flux (kg N_2O-N ha^{-1})	Fertiliser applied (kg N ha^{-1})
1 - Minimum Till - grass/clover	5.41	113.5
2 - Ploughed - grass/clover	3.39	113.5
3 - Ploughed - forage crop	4.98	73.5 Plus farmyard manure
4 - Minimum Till - forage crop	**5.61**	73.5 Plus farmyard manure
5 - Permanent pasture	**1.59**	113.5


Sward Dry Matter Biomass on the 13th August 2013
Animals were removed from Plots 1, 2 & 5 on the 19th June, and seed was sown in Plots 3 & 4 on the 21st June
One year old reseed
'New' reseed
Weeds
Clover
Grass
Dry Matter (tonnes/ha)
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Plot 1 - Minimum Till - grass/clover (2012)
Plot 2 - Ploughed - grass/clover (2012)
Plot 3 - Ploughed - grass/clover (2013); Ploughed - forage crop (2012)
Plot 4 - Ploughed - grass/clover (2013); Minimum Till - forage crop (2012)
Plot 5 - Permanent Pasture

Economics – Grassland Establishment Costs per Hectare

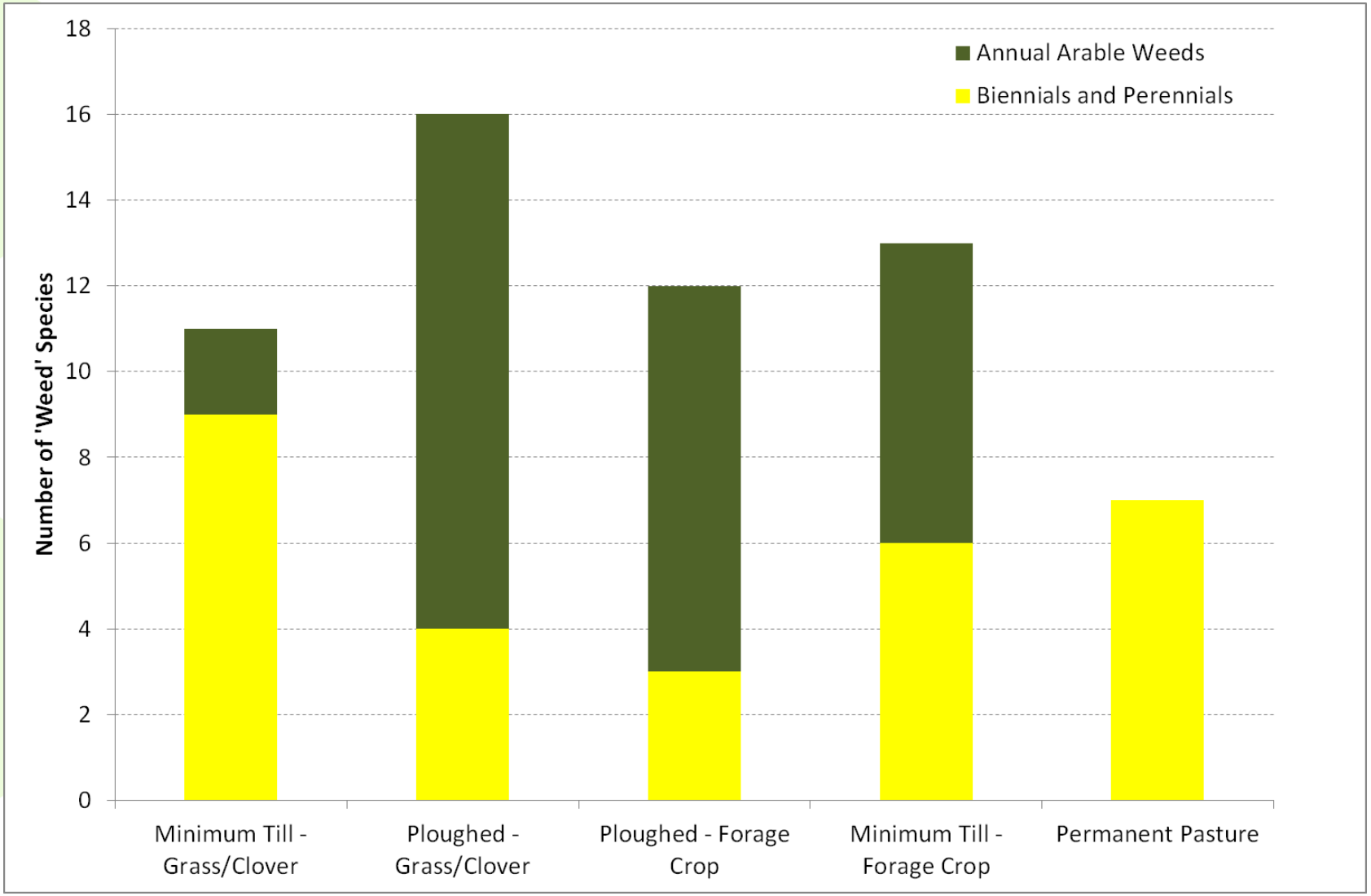


Weed Diversity 2012

	Minimum Till Grass	Ploughed Grass	Ploughed Forage	Minimum Till Forage	Permanent Pasture
Species (English Name)	**Plot 1**	**Plot 2**	**Plot 3**	**Plot 4**	**Plot 5**
Meadow Buttercup					
Broad-leaved Willow-herb					
Common Sorrel					
Daisy					
Common Nettle					
Common Groundsel					
Broad-leaved Dock					
Creeping Buttercup					
Wavy Bitter-cress					
Common Chickweed					
Common Mouse-ear					
Blinks					
Toad Rush					
Common Hemp-Nettle					
Large-flowered Hemp-Nettle					
Red Shank					
Pineappleweed					
Marsh Cudweed					
Knotgrass					
Pale Persicaria					
Fat Hen					
Wild Radish					
Corn Spurrey					
Green Field Speedwell					
Creeping Thistle					

Key (abundance within the plots)
Frequent
Occasional
Rare

Biodiversity – Annual Arable 'Weeds' (Year 1)



Large-flowered Hemp Nettle
(*Galeopsis speciosa*)

Common Hemp-Nettle
(*Galeopsis tetrahit*)

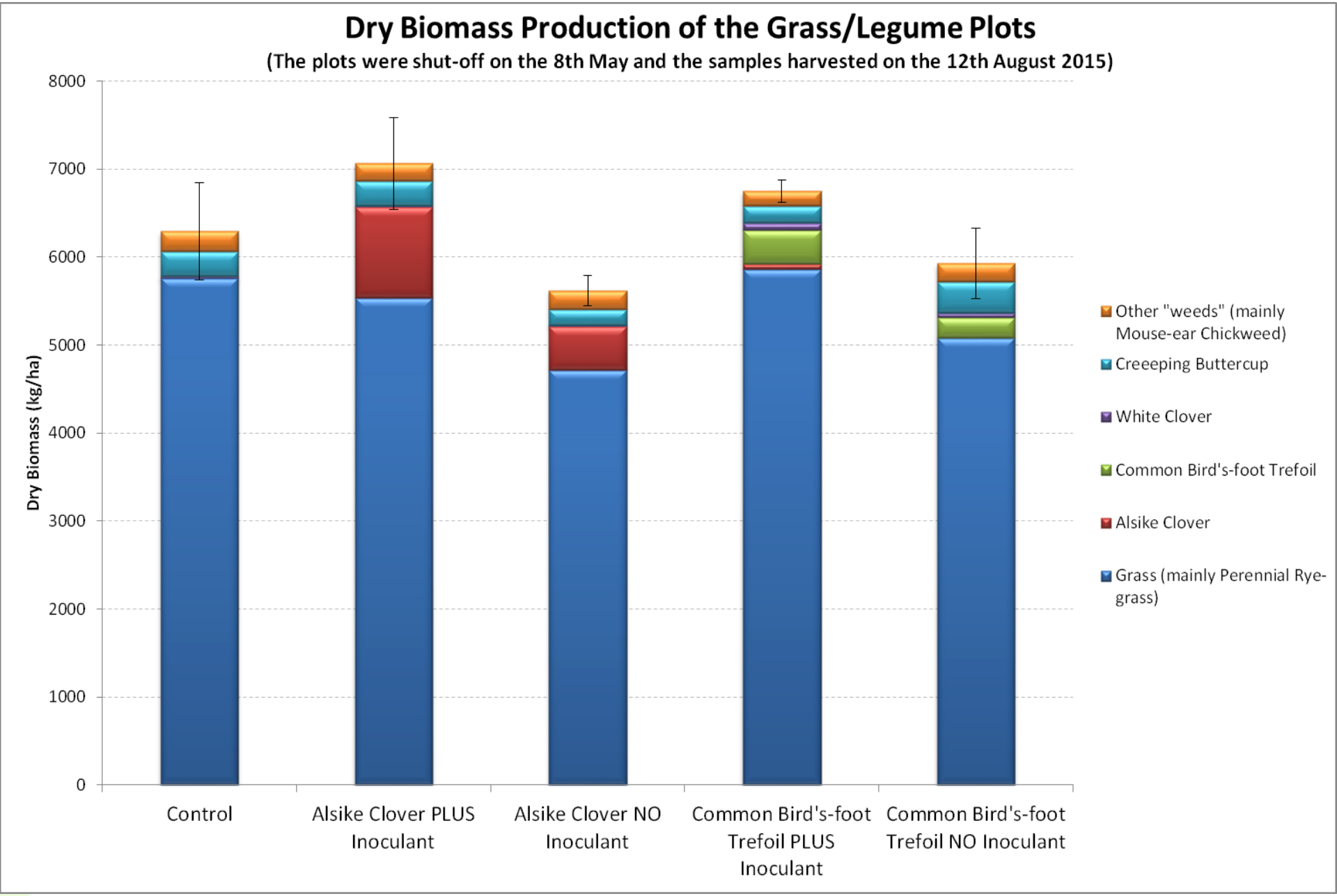
Redshank
(*Persicaria maculosa*)

Heath Bumblebee
(*Bombus jonellus*)

Alternative Legumes

Alsike Clover
(*Trifolium hybridum*)

Common Bird's-foot Trefoil
(*Lotus corniculatus*)


Dry Biomass Production of the Grass/Legume Plots
(The plots were shut-off on the 8th May and the samples harvested on the 12th August 2015)
Dry Biomass (kg/ha)
8000
7000
6000
5000
4000
3000
2000
1000
0
Control
Alsike Clover PLUS Inoculant
Alsike Clover NO Inoculant
Common Bird's-foot Trefoil PLUS Inoculant
Common Bird's-foot Trefoil NO Inoculant
Other "weeds" (mainly Mouse-ear Chickweed)
Creeeping Buttercup
White Clover
Common Bird's-foot Trefoil
Alsike Clover
Grass (mainly Perennial Rye-grass)

Farmer Grassland Group

SRUC receives support from Scottish Government and the Scottish Funding Council for Knowledge Transfer and Exchange