

Improving Soil Fertility

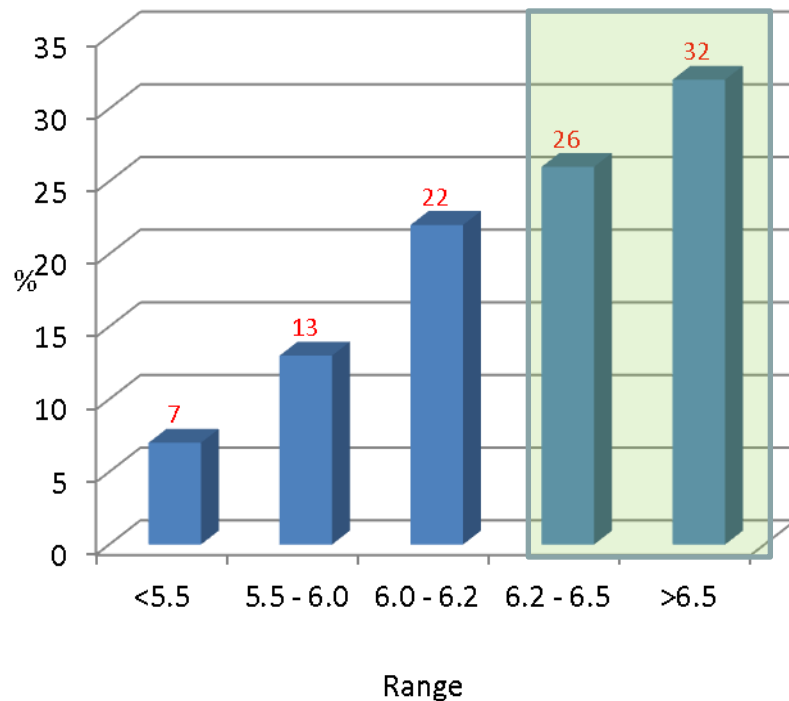
An Advisors Experience



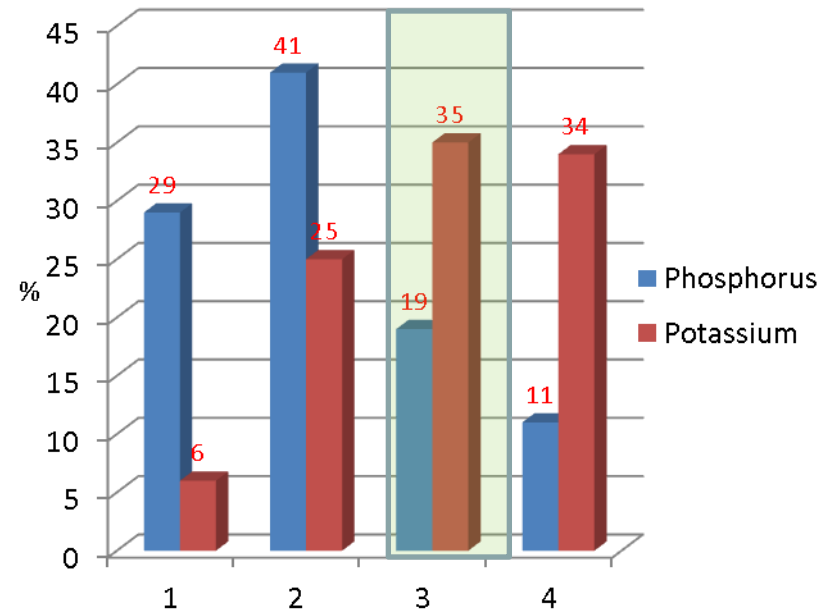
John Pettit, David Wall & Mark Plunkett
Teagasc

Wexford Tillage Soil Fertility (2015)

Soil pH



Soil Phosphorus & Potassium Index



Williamson Farm (2009 – 2014)

- ◆ Average pH declined from 6.5 to 6.2
- ◆ Average soil P level increased from 3.9 mg/l to 5.1 mg/l.
- ◆ Average soil K level increased from 100 mg/l to 128 mg/l.

Contributing factors to increasing soil fertility on the Williamsons farm.

◆ Data or Information

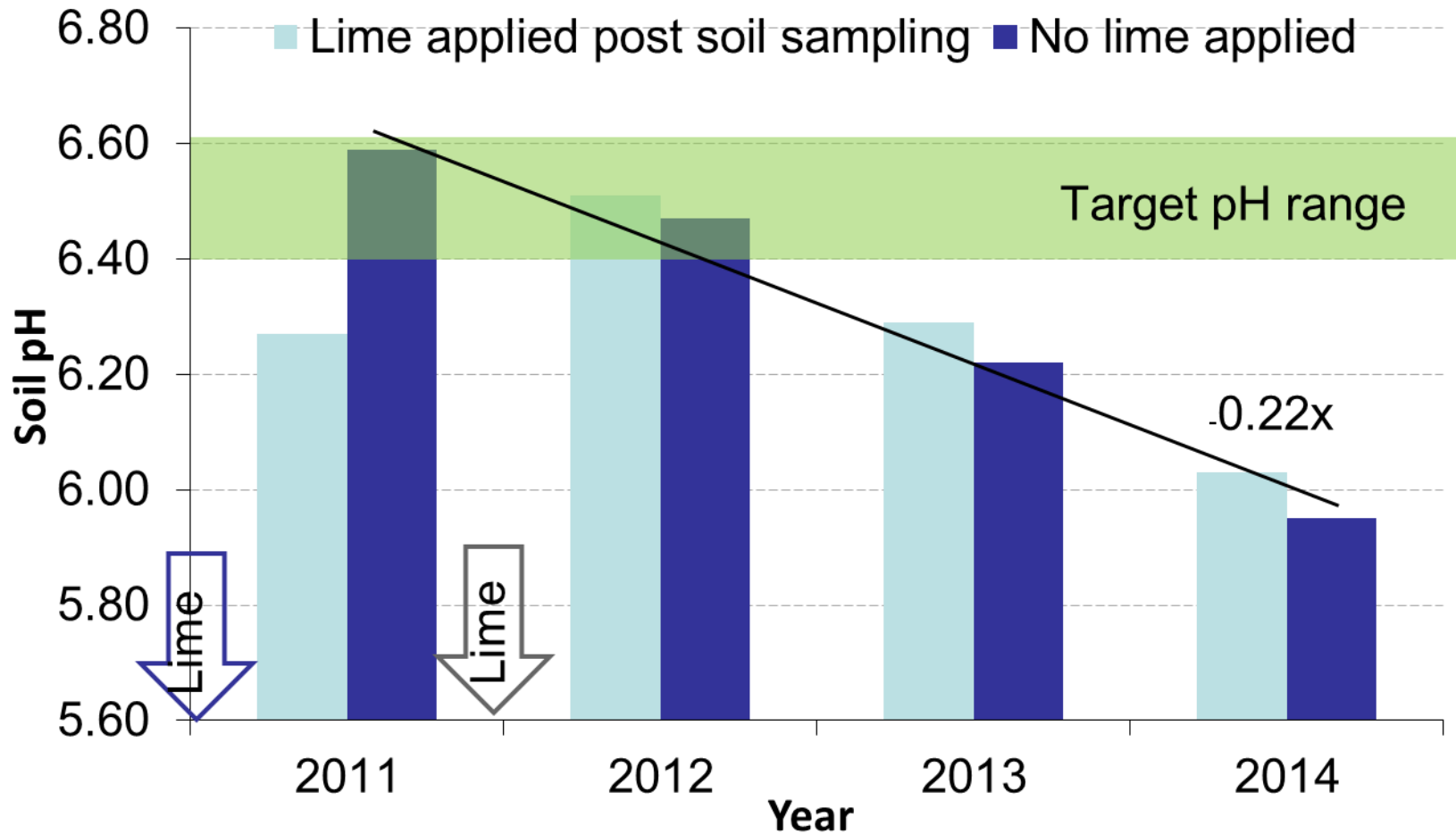
- ▶ Current and previous soil sample results.
- ▶ Previous crop yields.
- ▶ Previous fertiliser applied.

◆ Simple Nutrient Advice

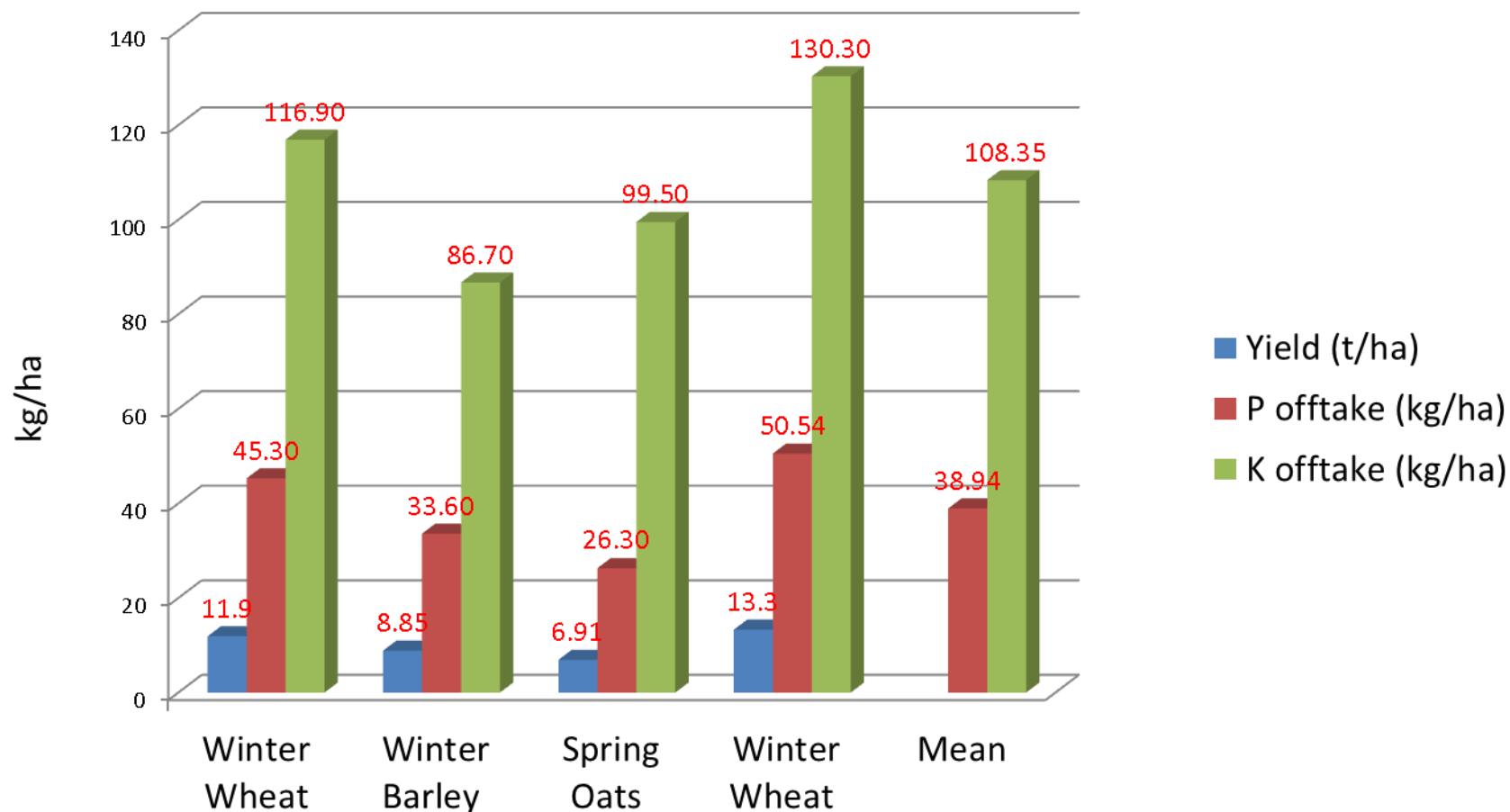
- ▶ Fertiliser compound, quantity and timing.
- ▶ Lime, quantity and timing.
- ▶ Trace element advice.

◆ The use of fertiliser compounds that better matched crop nutrient off-takes.

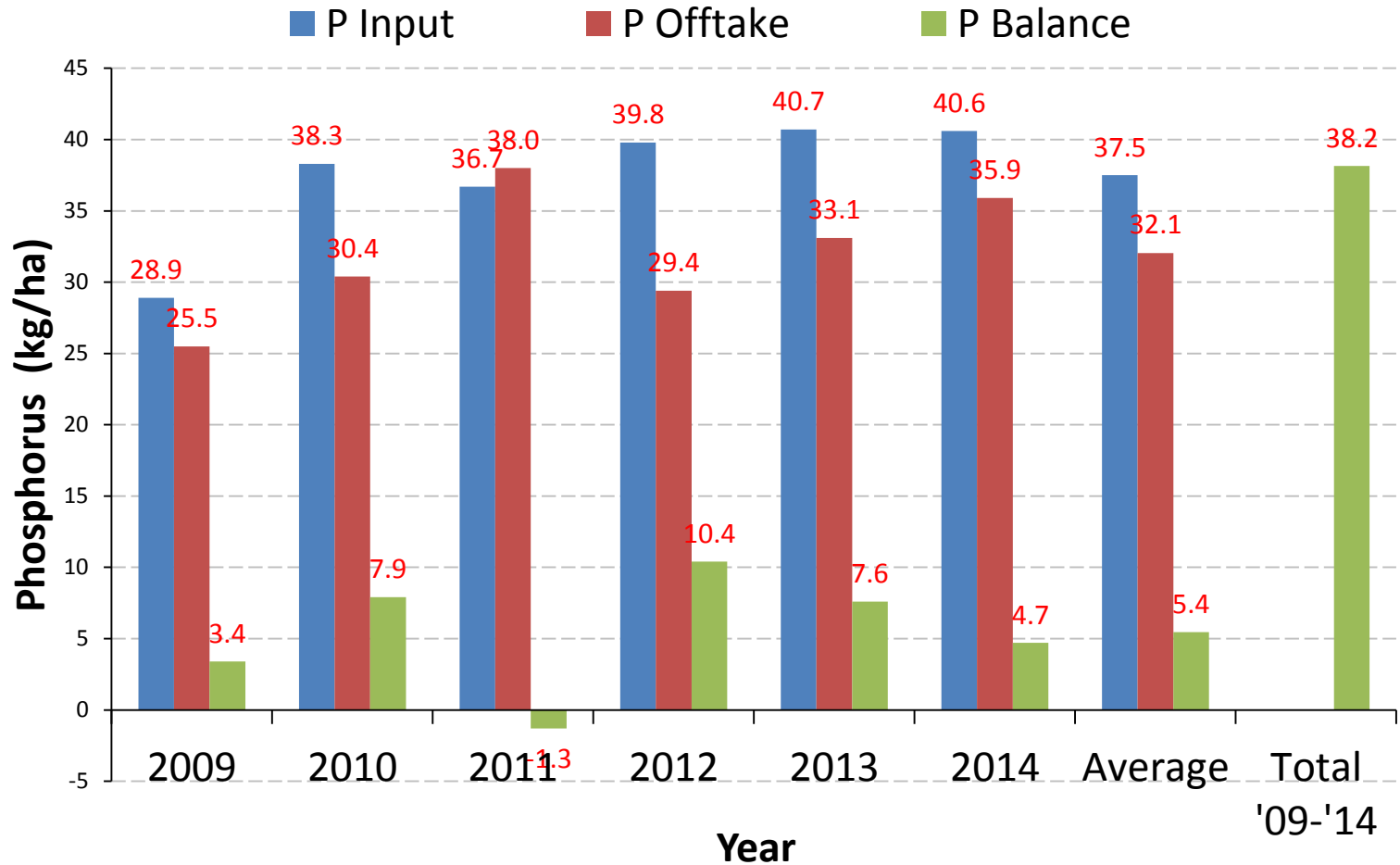
Change of soil pH over time.



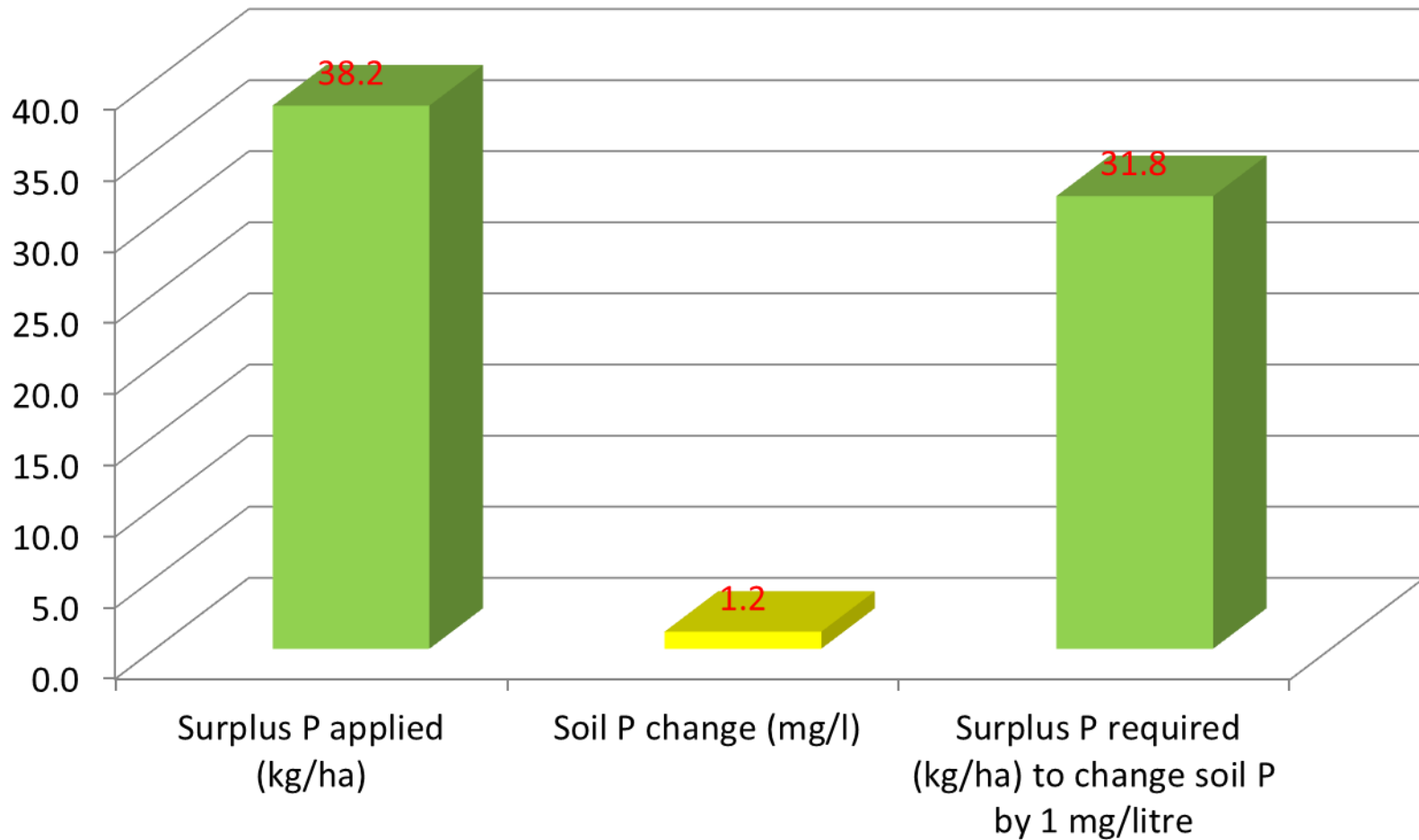
Crop Phosphorus and Potassium Off Take.



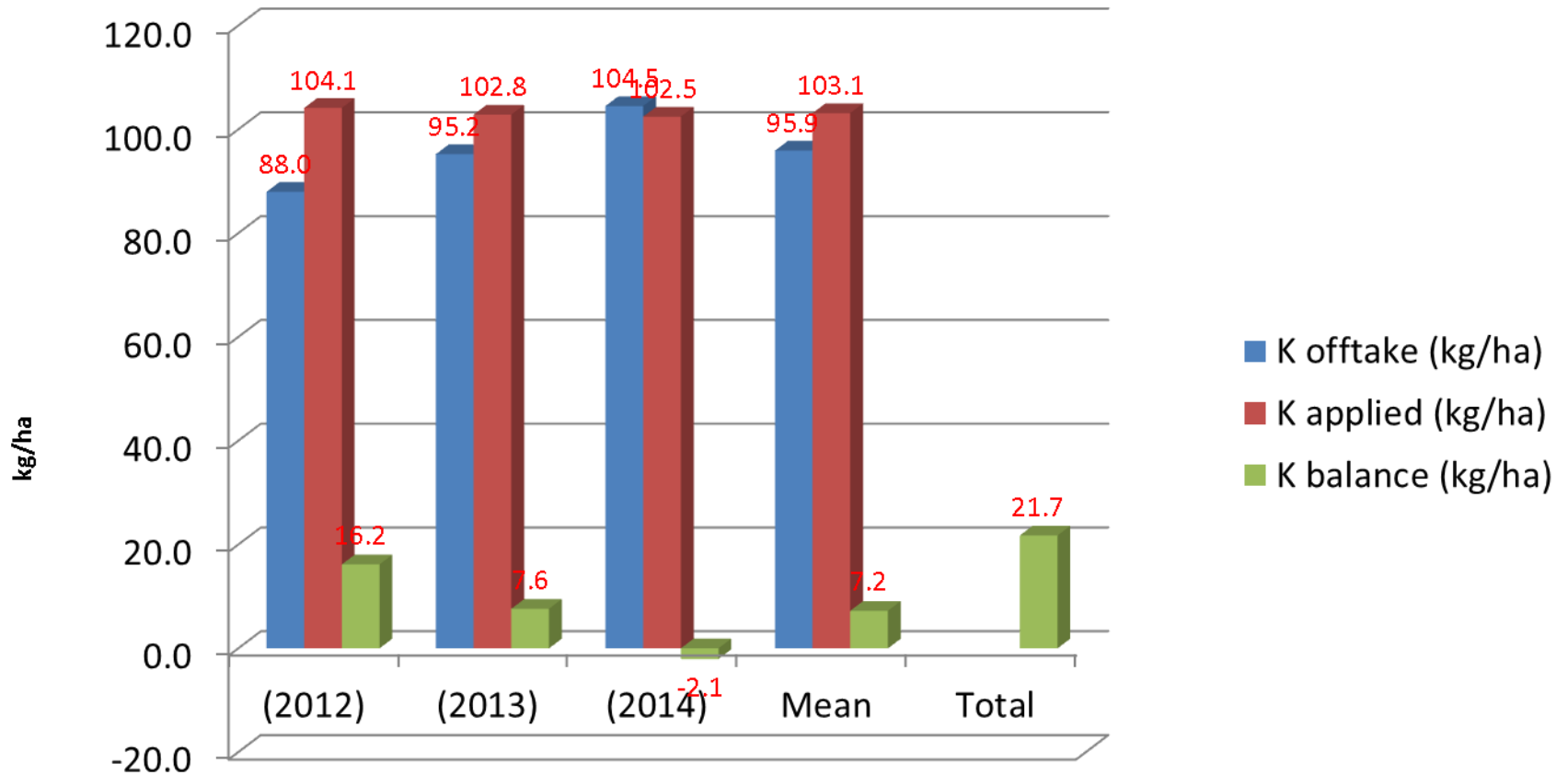
Phosphorus Balance



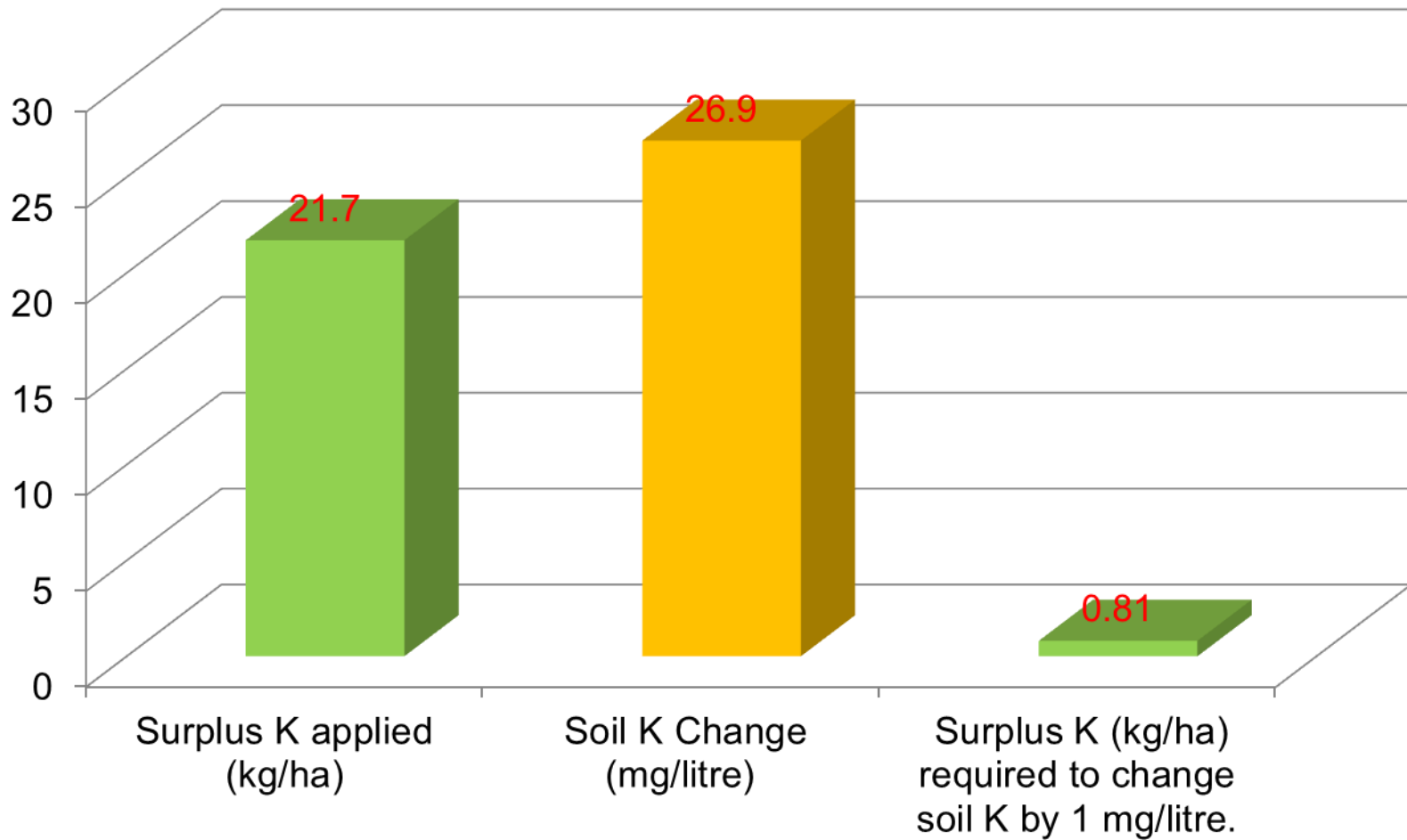
The effect of surplus applied Phosphorus on Soil Phosphorus (P)



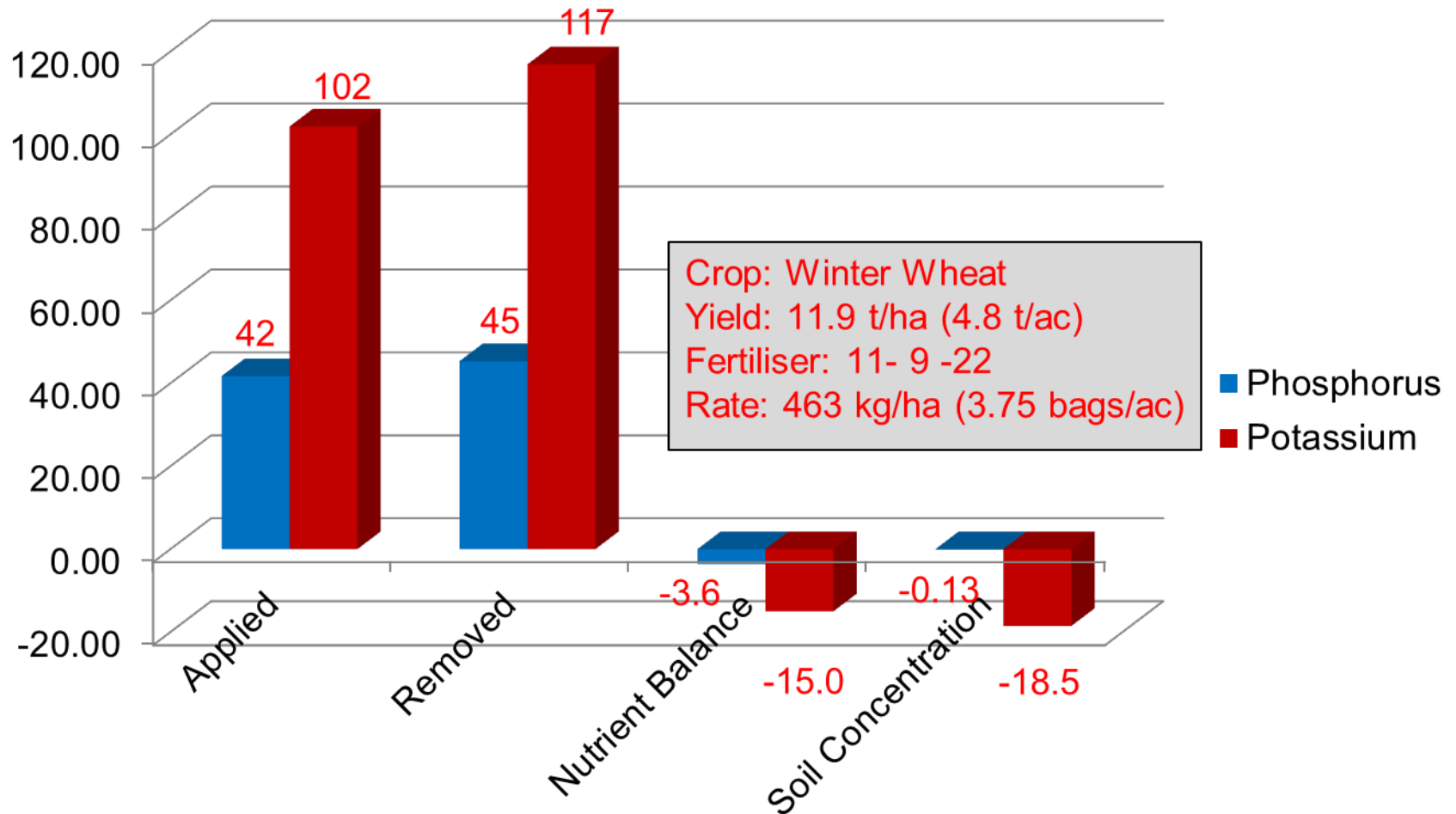
Farm Potassium Balance



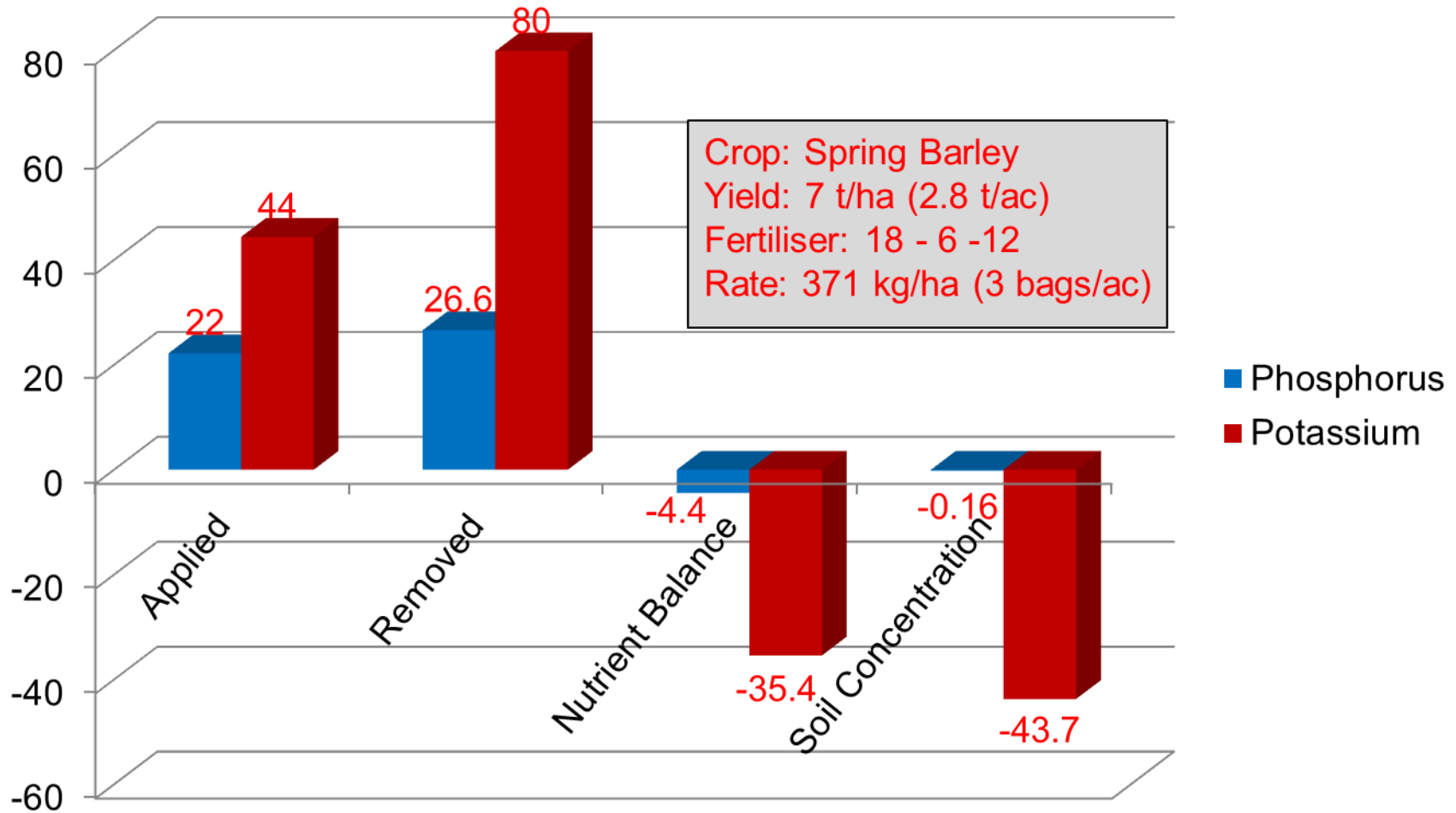
The effect of surplus applied Potassium on Soil Potassium (K)



The effect of a large grain off-take on soil P & K concentration.



The effect of a low P/K compound on soil P/K concentration.



Simple Nutrient Advice

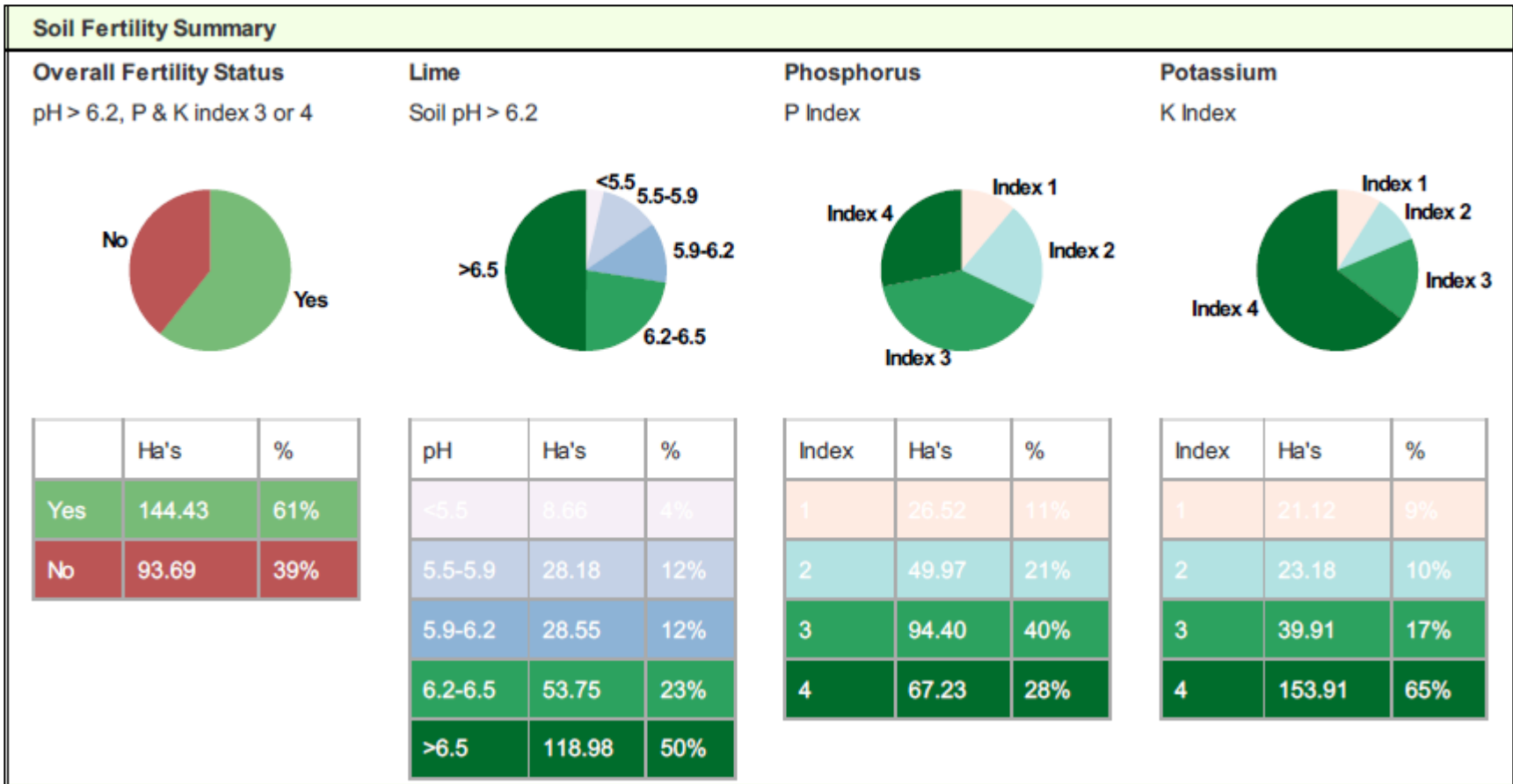
George & Kenneth Williamson (2015)

Field(s)	Crop	Area (ac)	Application 1		Application 2		Application 3	
			Fert. Type	Bags/ac	Fert. Type	Bags/ac	Fert. Type	Bags/ac
3rd Field Inside Dorans	SB	8.0	11.09.22	3.50	CAN + S	2.25	CAN + S	1.00
2nd Field Inside Dorans	WW	20.0	11.09.22	4.00	CAN + S	3.00	CAN + S	2.00
Shed Field Seafield	SB	19.0	13.06.20	4.00	CAN + S	1.75	CAN + S	1.00

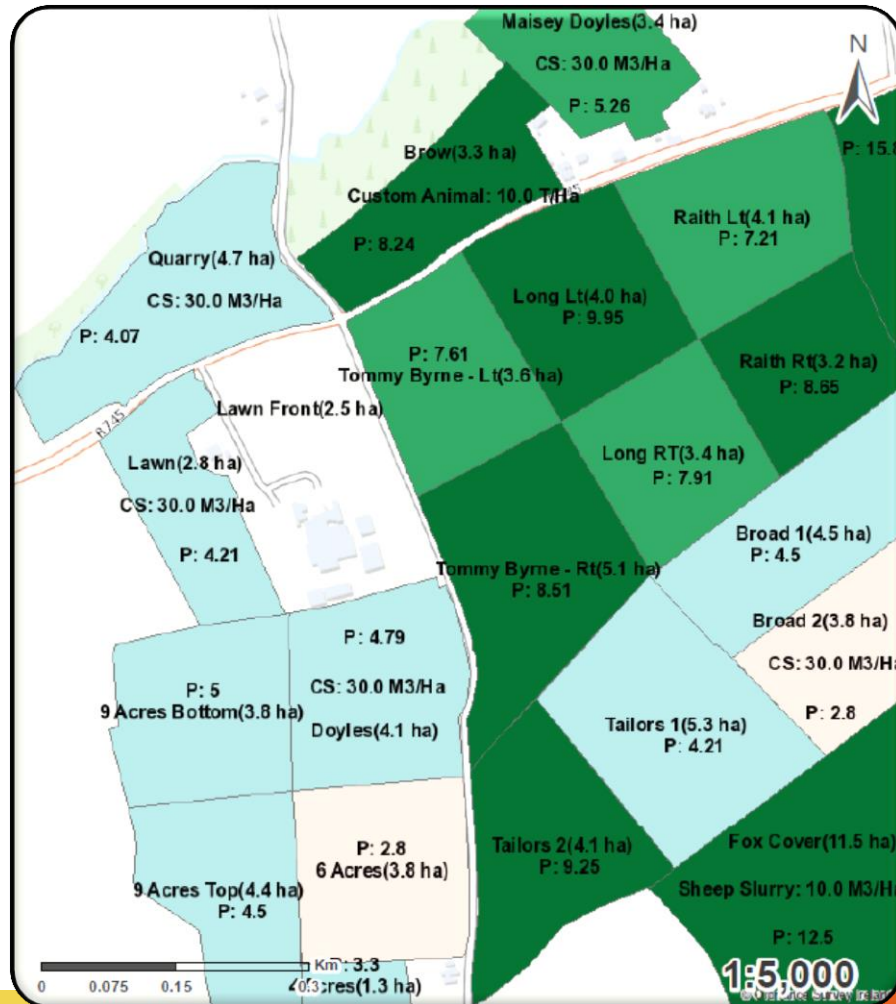
Crop	Application 1	Application 2	Application 3
Winter Wheat	15th March	7th April	28th April
Winter Barley	28th February	20th March	10th April
Spring Barley	Pre-Sowing	Tramlines Visible	GS 21 (1st Tiller)

Field(s)	Lime	Magnesium	Mangenesse	Zinc	Copper
3rd Field Inside Dorans	2 ton 2016	OK	OK	Zintrac X 1	OK
2nd Field Inside Dorans	2 ton 2016	OK	OK	Zintrac X 1	OK
Shed Field Seafield	2 ton 2017	OK	OK	OK	OK

NMP On-Line Nutrient Management System.



Nutrient Maps



Conclusions

- ◆ Soil Sample every 3 years on light soils or soils that are producing high grain yields.
- ◆ Lime needs to be applied more frequently to account for a more rapid pH decline on particular soils.
- ◆ Compare current soil test results to previous results to monitor soil fertility change.
- ◆ Conduct nutrient balances between soil samples to ensure soil fertility is maintained or improved.
- ◆ Tools such as NMP On-Line are a valuable means of capturing soil sample data and relaying it back to farmers in a user friendly manner.
- ◆ Use fertiliser compounds that better match crop off-take e.g. 13-6-20 / 12-8-20 / 11-9-22 / 9-9-26

Thanks for your attention.