

# Improving Soil Fertility

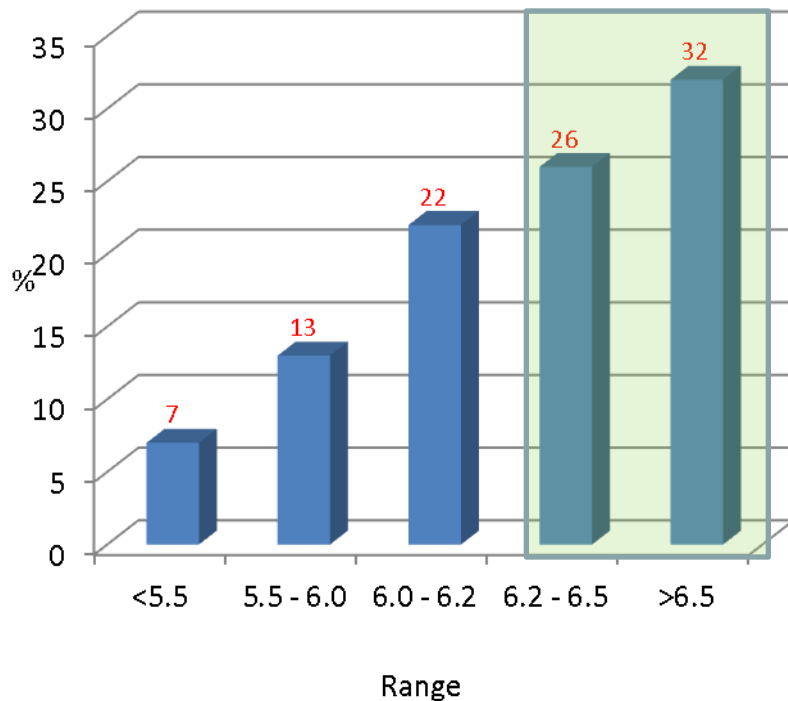
## *An Advisors Experience*



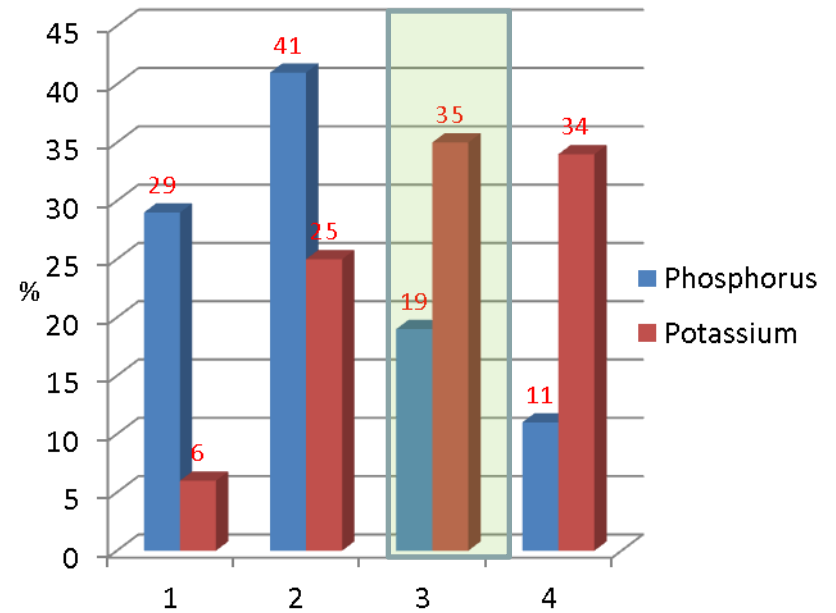
***John Pettit, David Wall & Mark Plunkett***  
***Teagasc***

# 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

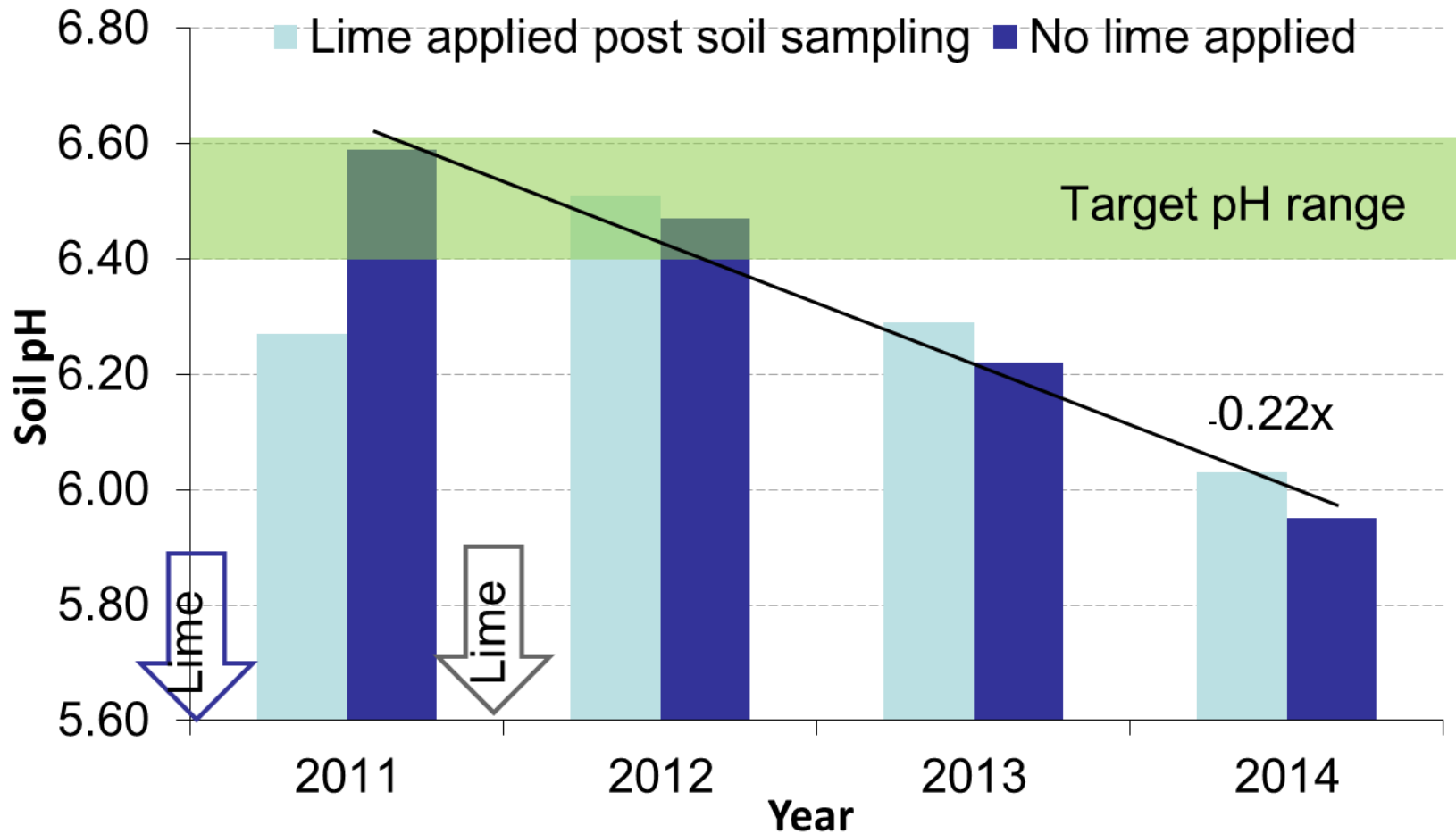
- ▶ Current and previous soil sample results.
- ▶ Previous crop yields.
- ▶ Previous fertiliser applied.

## ◆ Simple Nutrient Advice

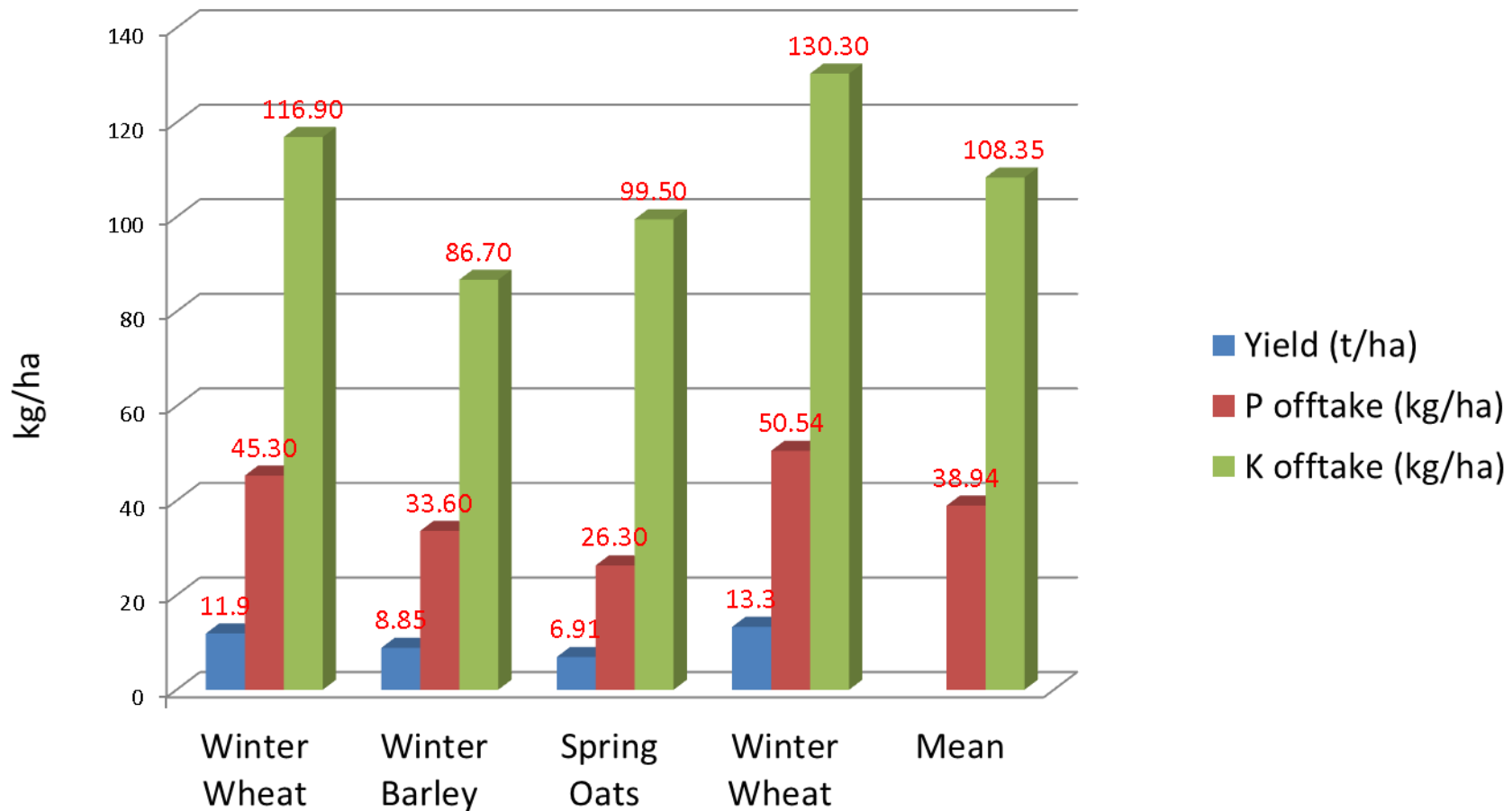
- ▶ Fertiliser compound, quantity and timing.
- ▶ Lime, quantity and timing.
- ▶ Trace element advice.

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

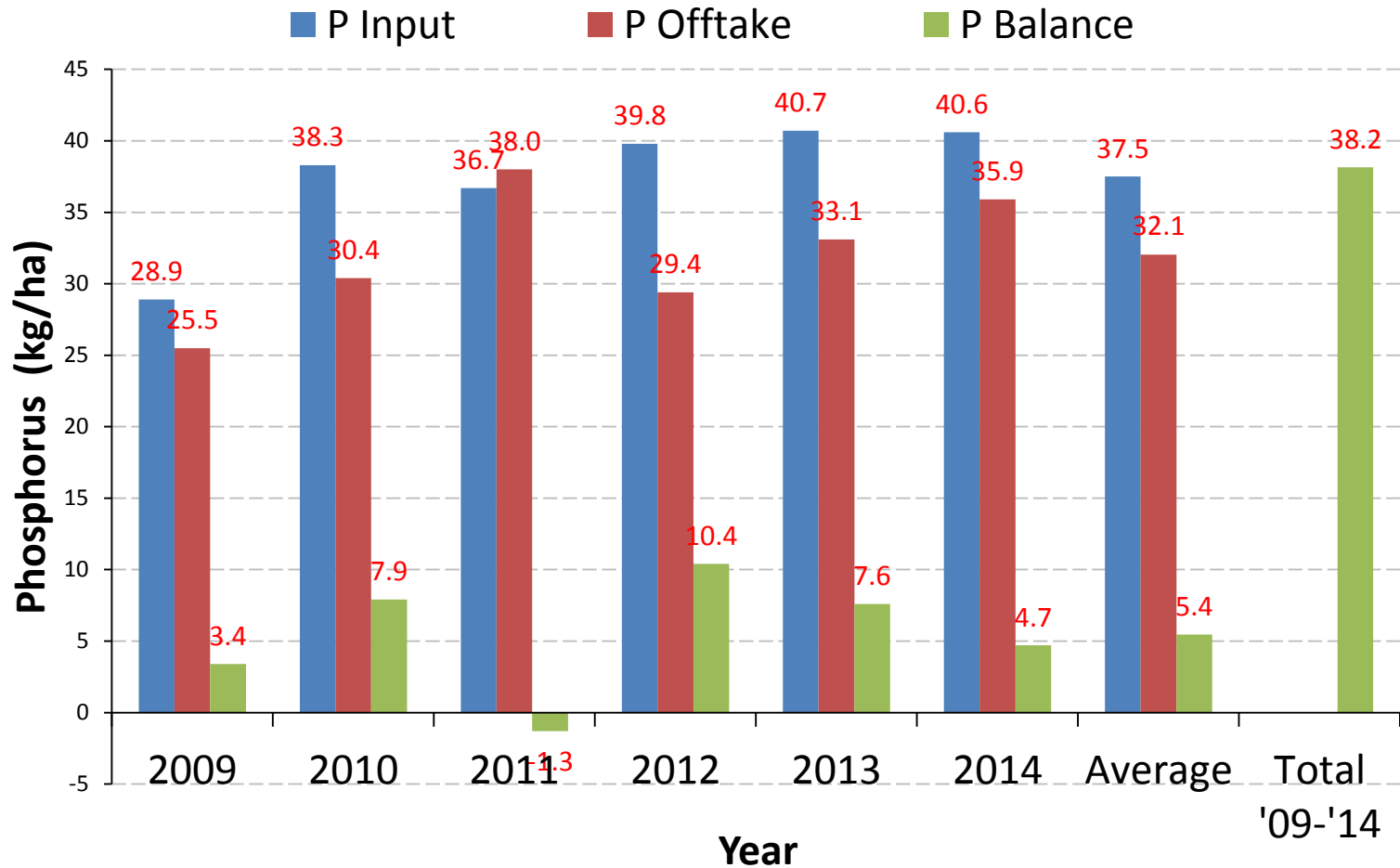
# Change of soil pH over time.



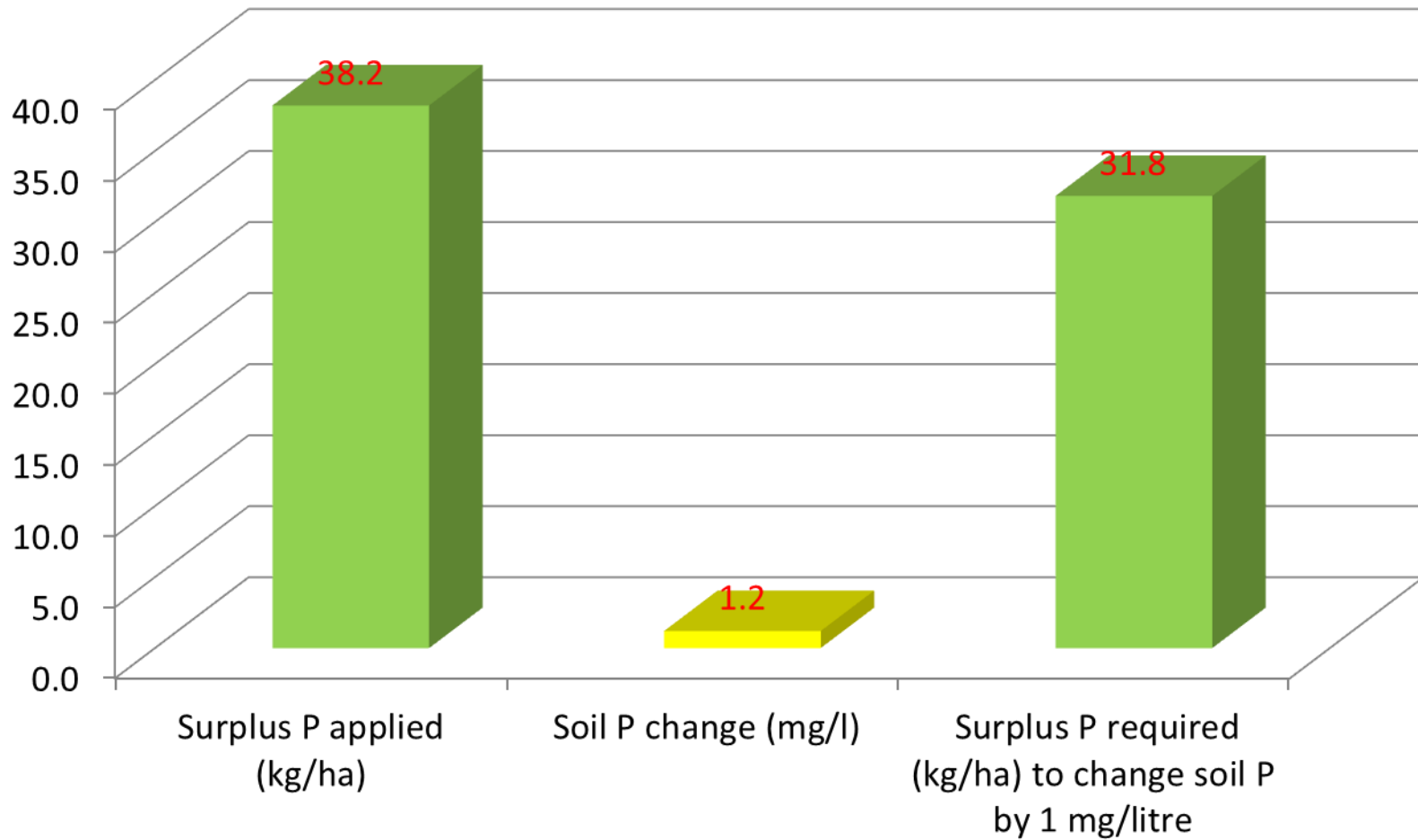
# Crop Phosphorus and Potassium Off Take.



# Phosphorus Balance

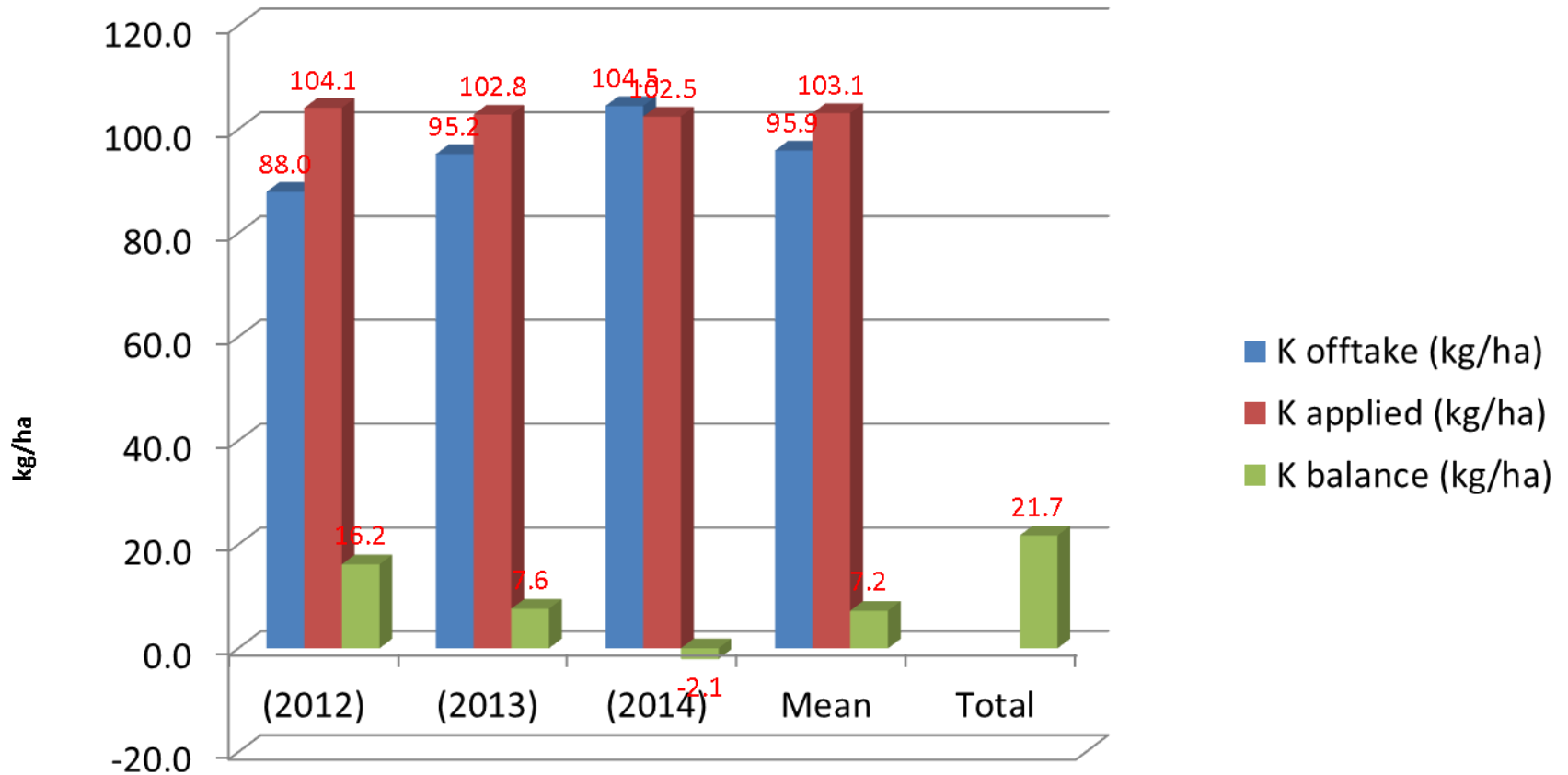


# The effect of surplus applied Phosphorus on Soil Phosphorus (P)

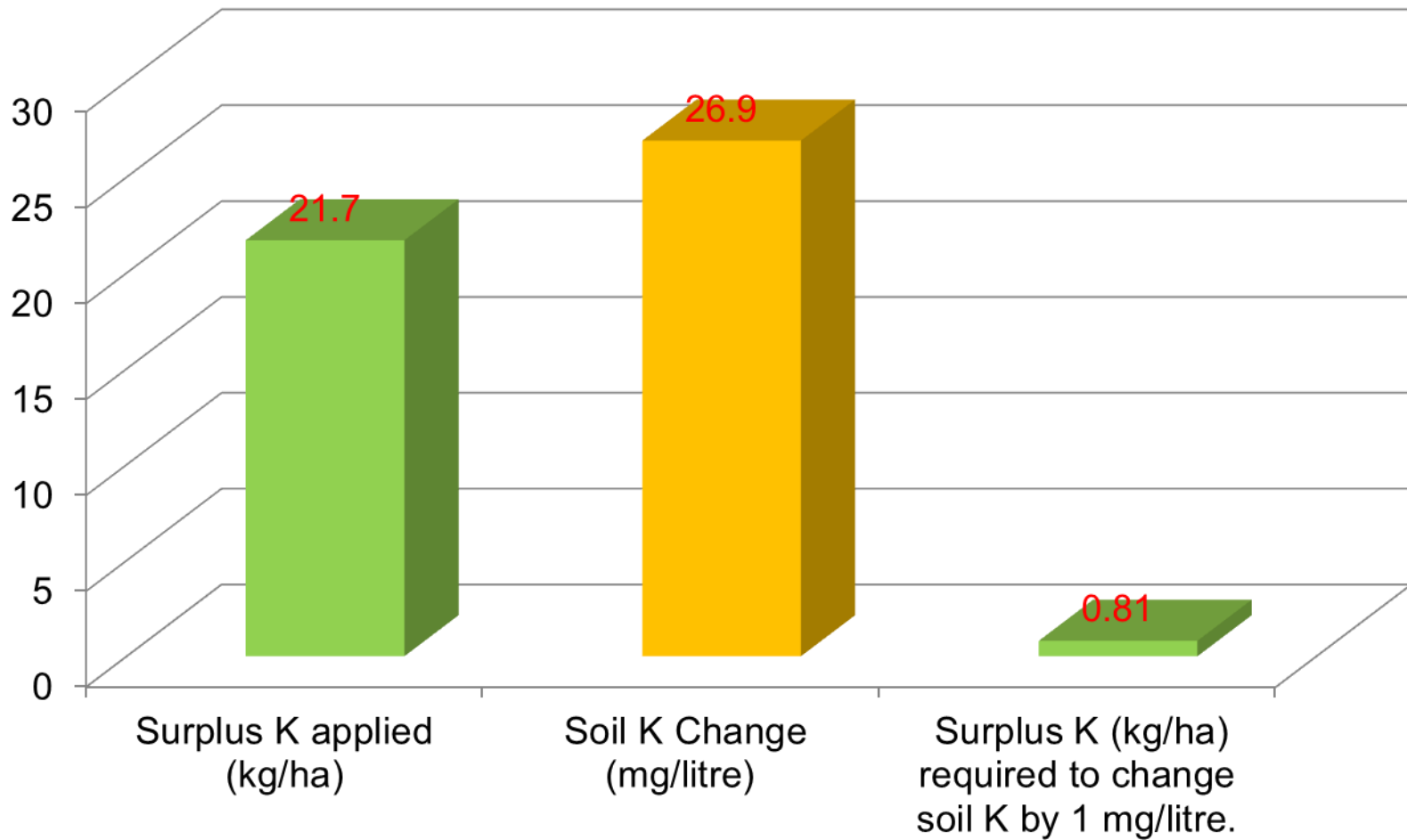




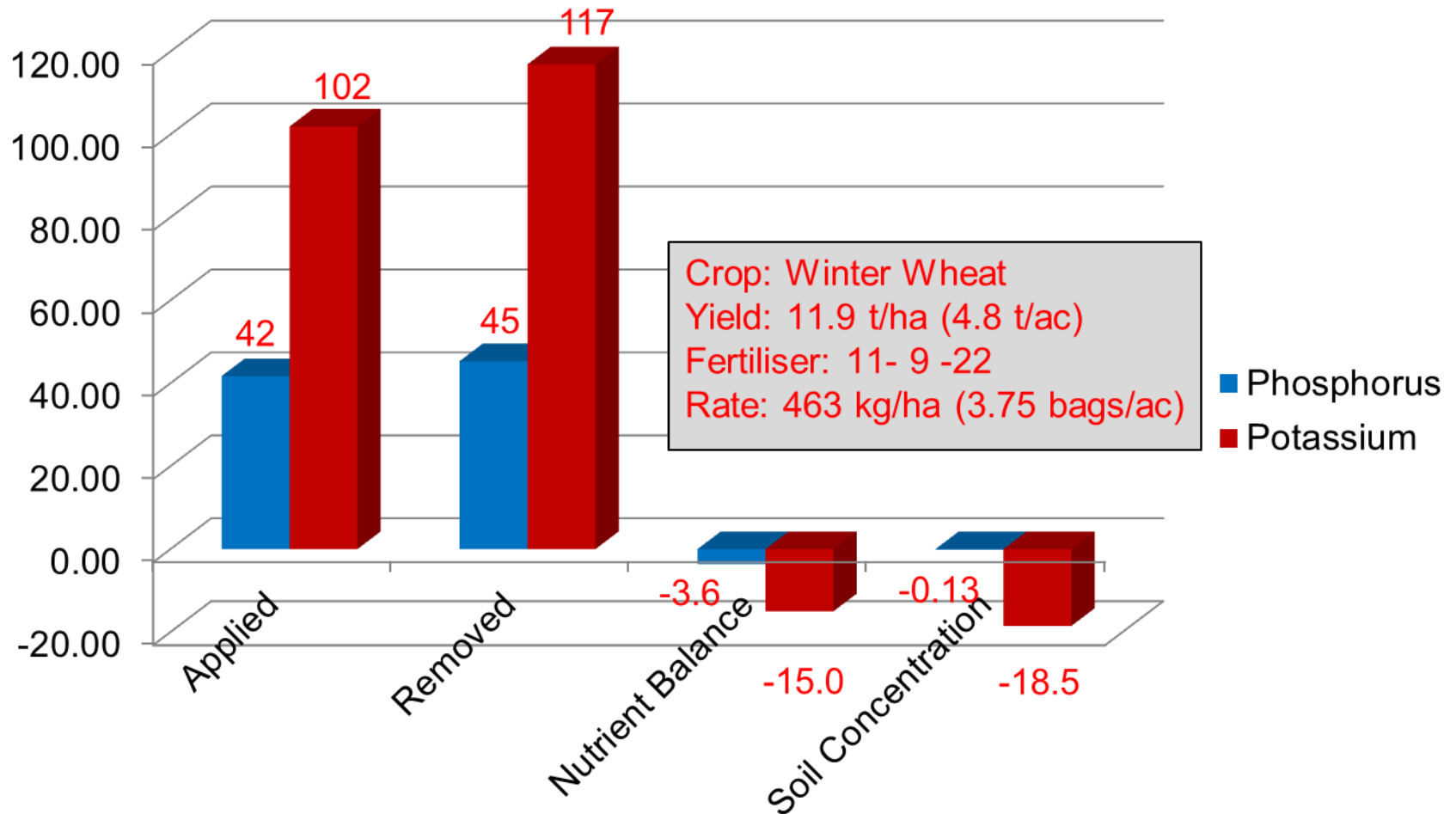
# Farm Potassium Balance



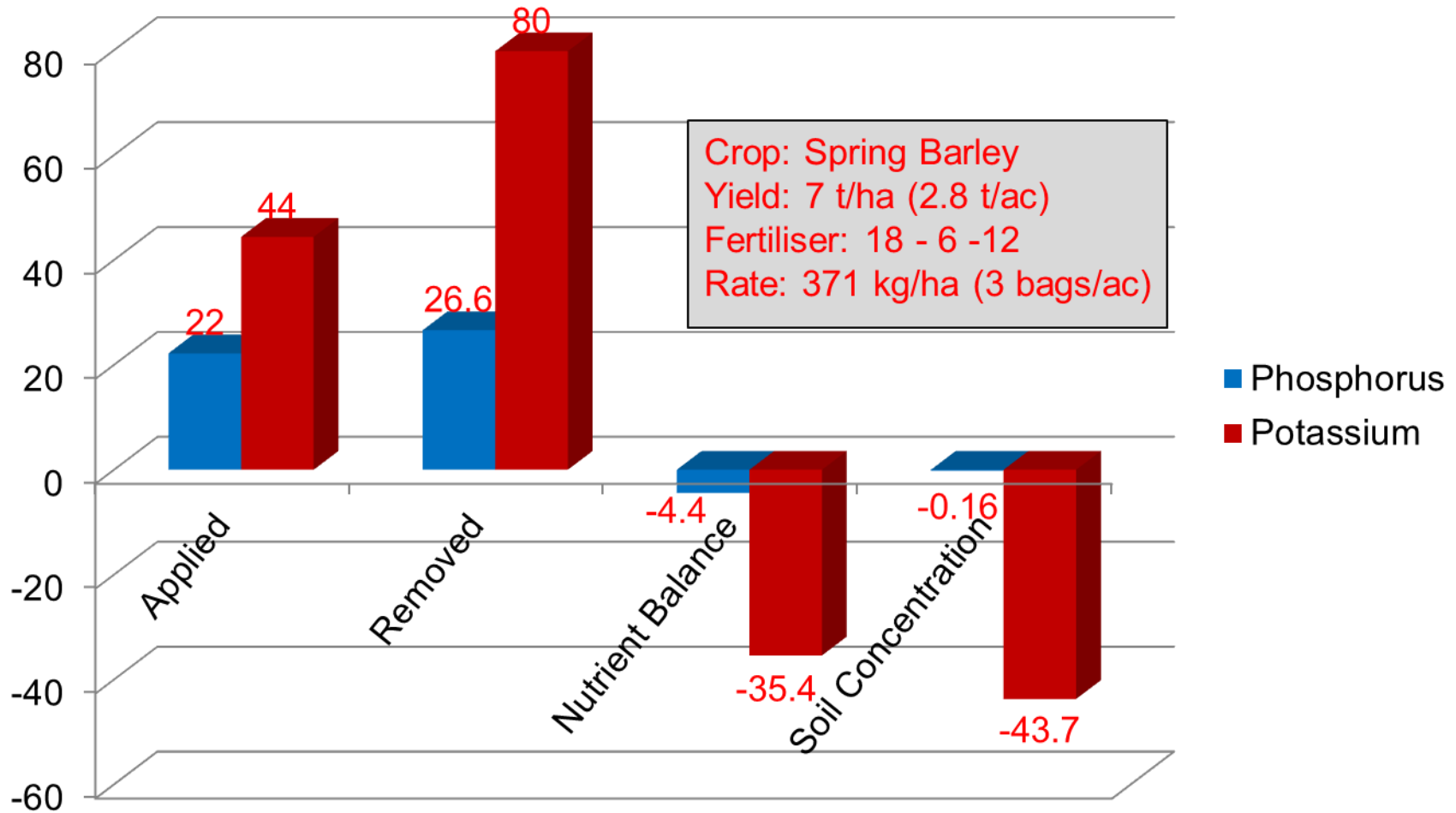
# The effect of surplus applied Potassium on Soil Potassium (K)



# 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

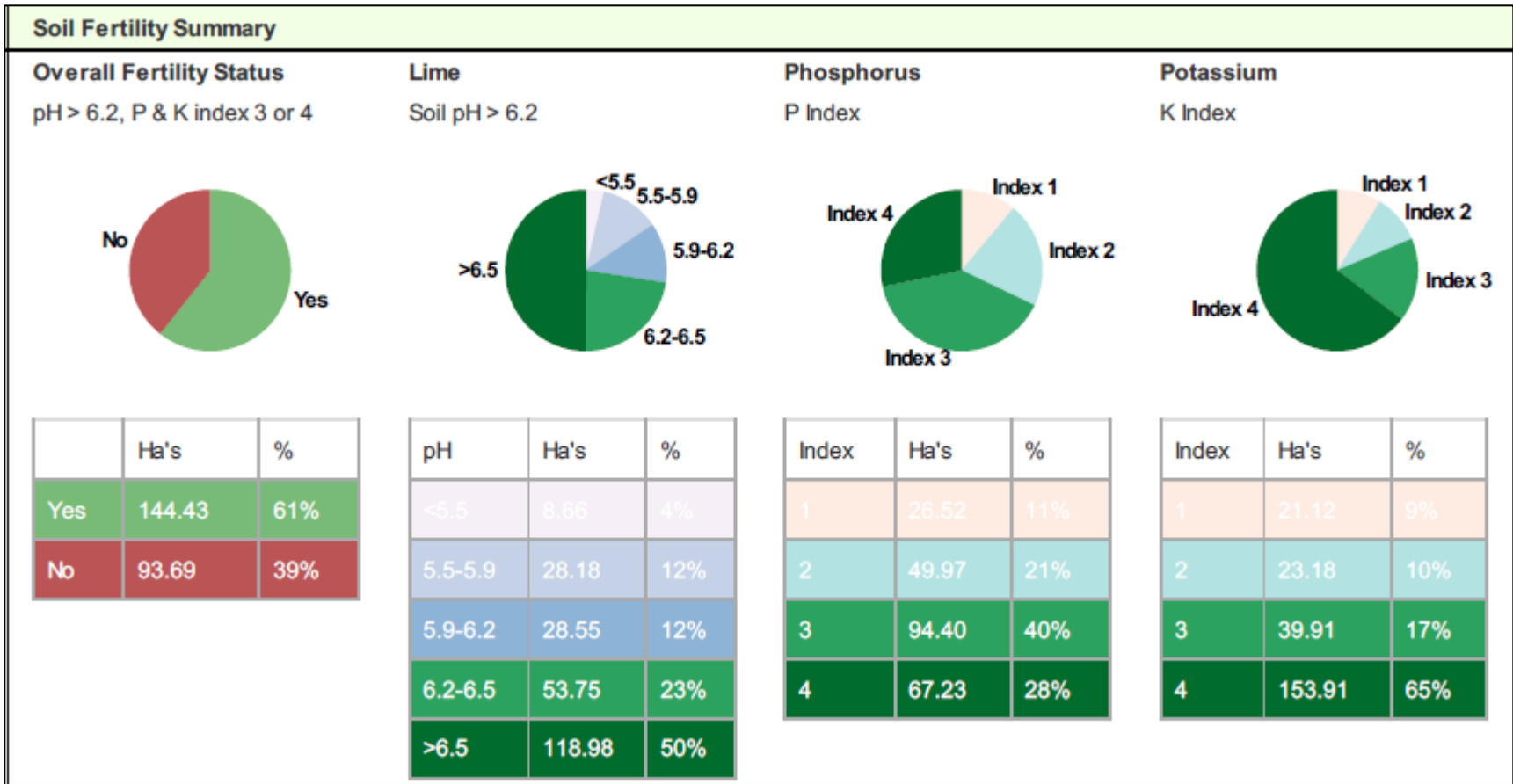
*George & Kenneth Williamson (2015)*

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

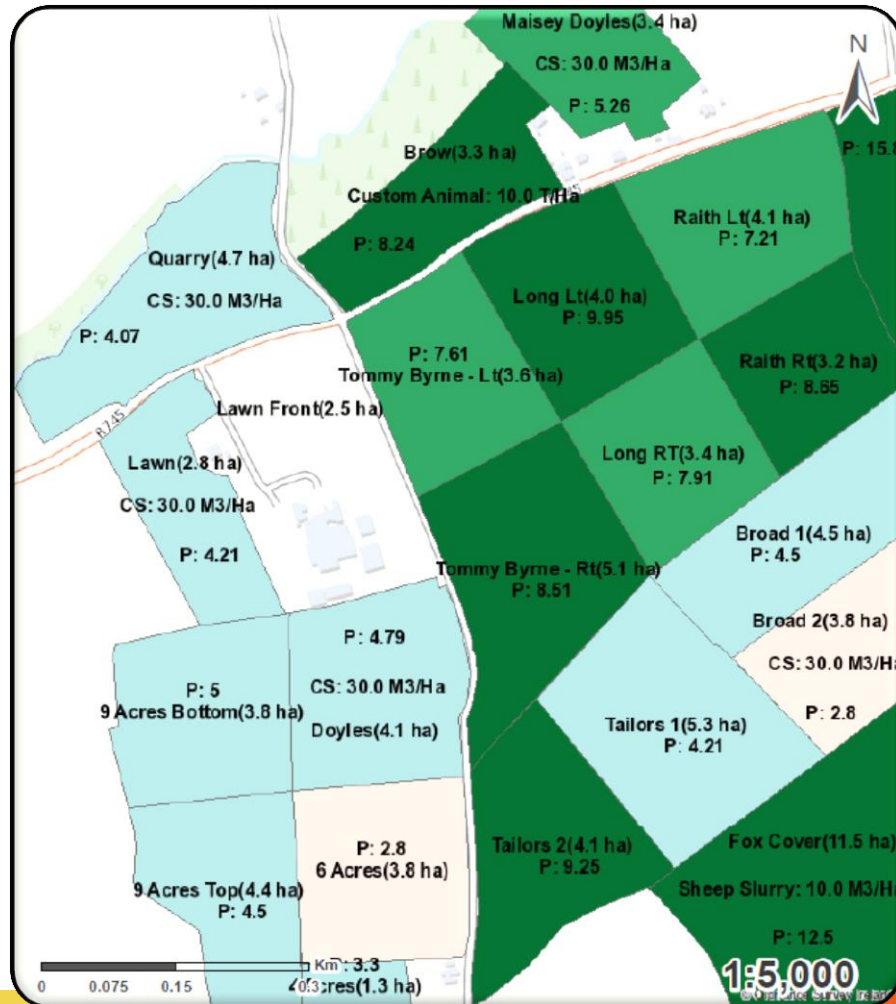
Crop	Application 1	Application 2	Application 3
Winter Wheat	15th March	7th April	28th April
Winter Barley	28th February	20th March	10th April
Spring Barley	Pre-Sowing	Tramlines Visible	GS 21 (1st Tiller)

Field(s)	Lime	Magnesium	Mangnese	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.**