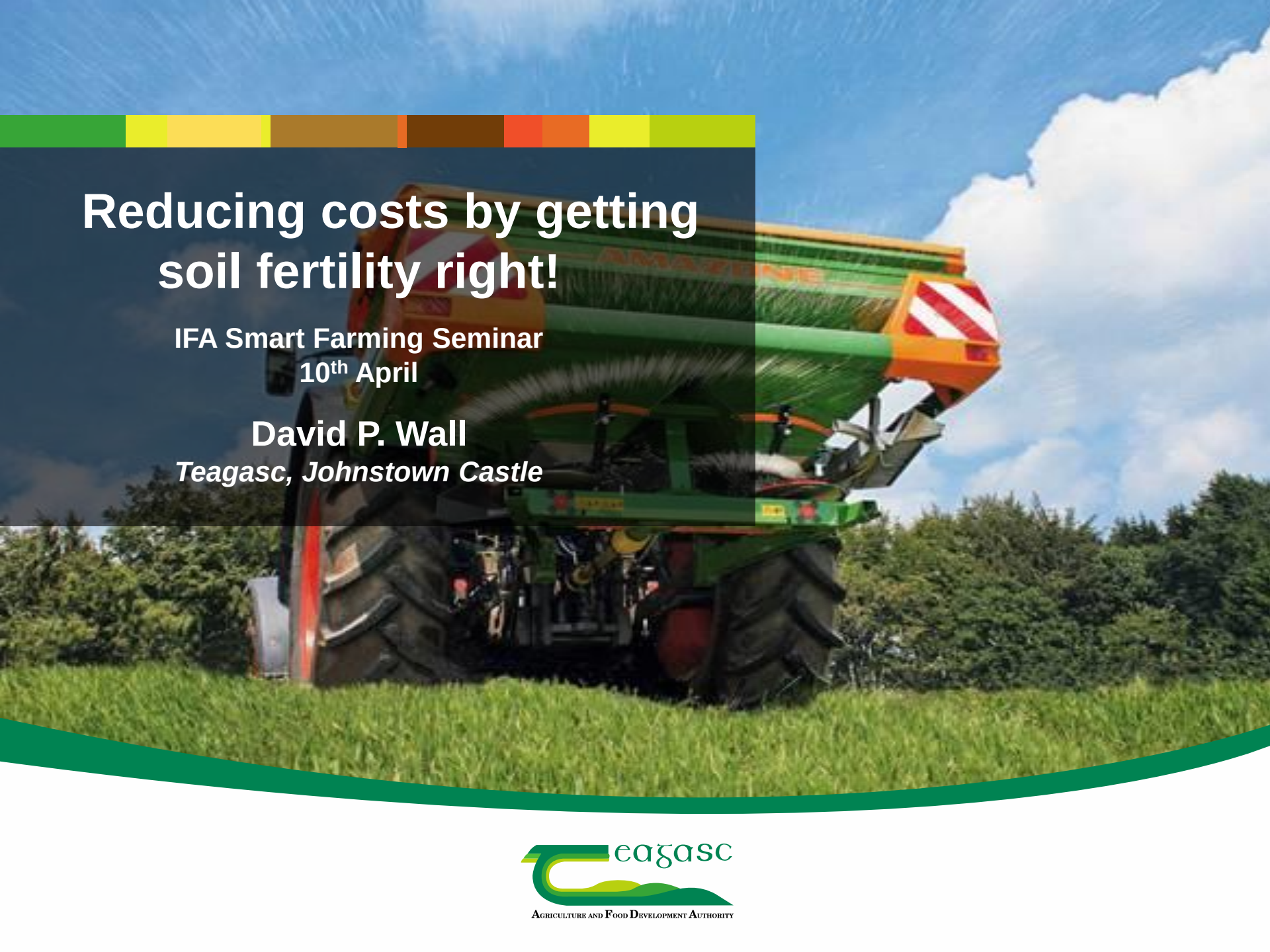


Reducing costs by getting soil fertility right!

IFA Smart Farming Seminar
10th April

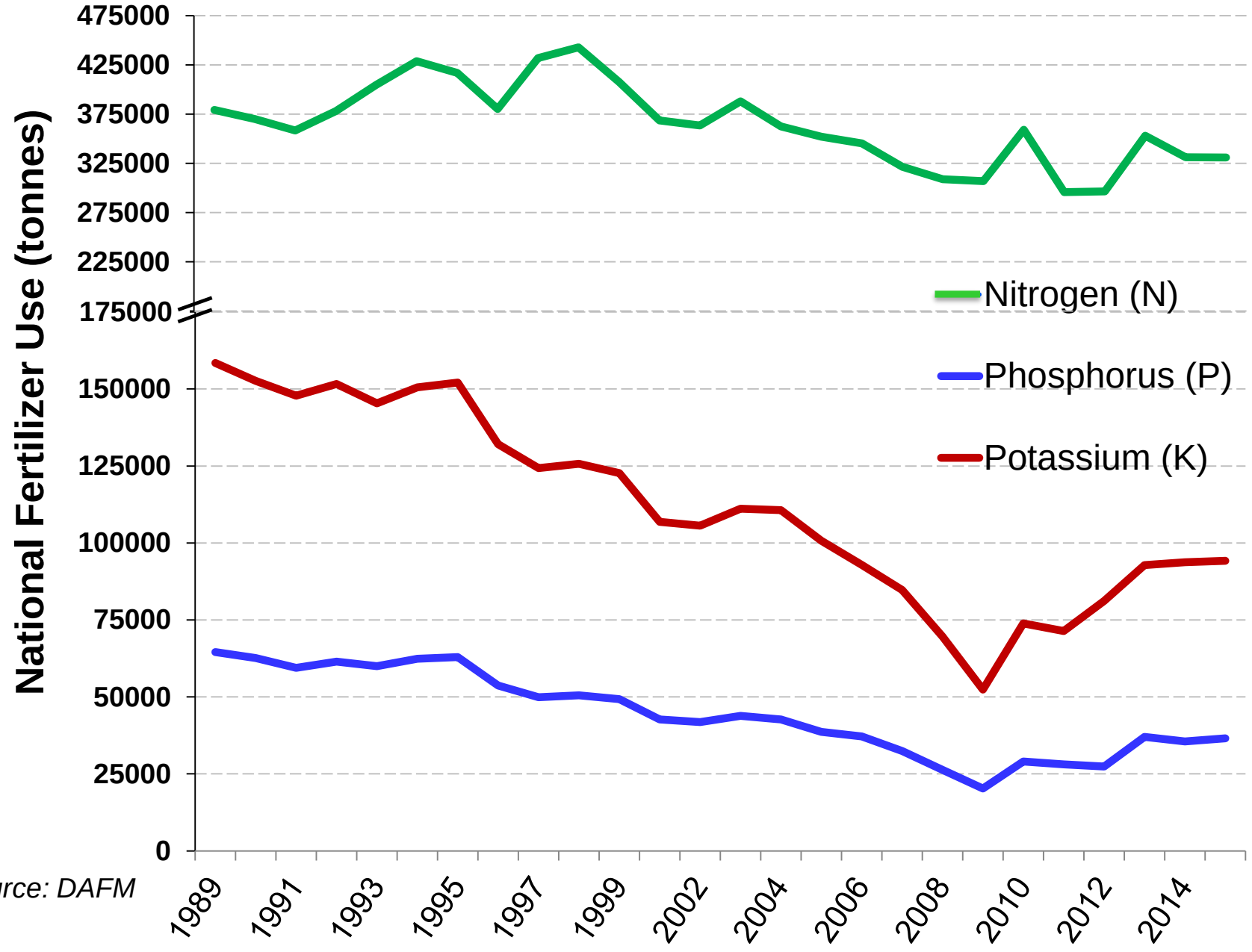
David P. Wall
Teagasc, Johnstown Castle

Teagasc
Agriculture and Food Development Authority

Outline

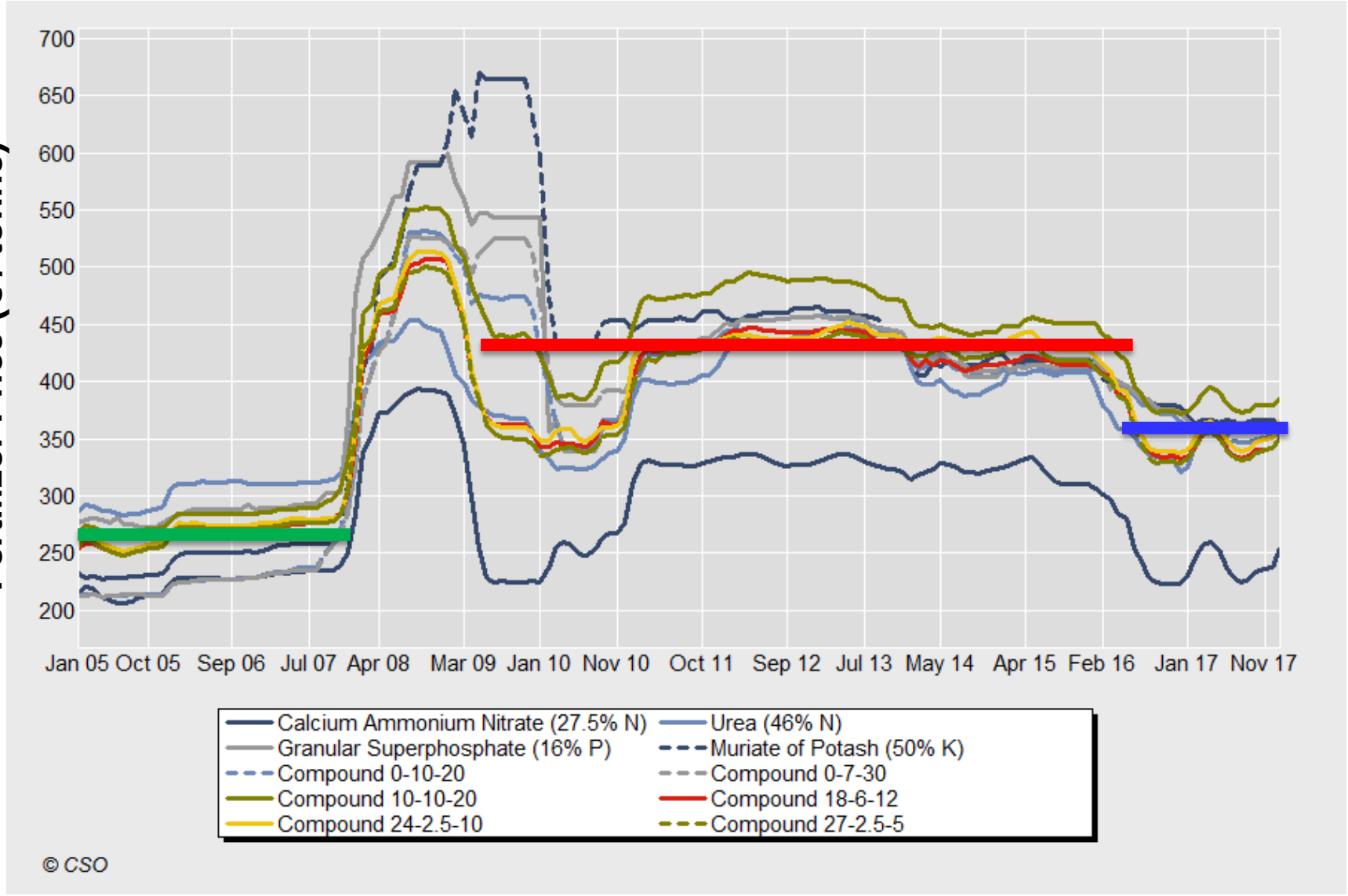
- Soil fertility & fertiliser trends
- Balancing Lime, P and K fertiliser applications
- Building Soil fertility?
- Soil fertility management targets

N, P & K Fertilizer use 1990 - 2016



Source: DAFM

Fertilizer €ost



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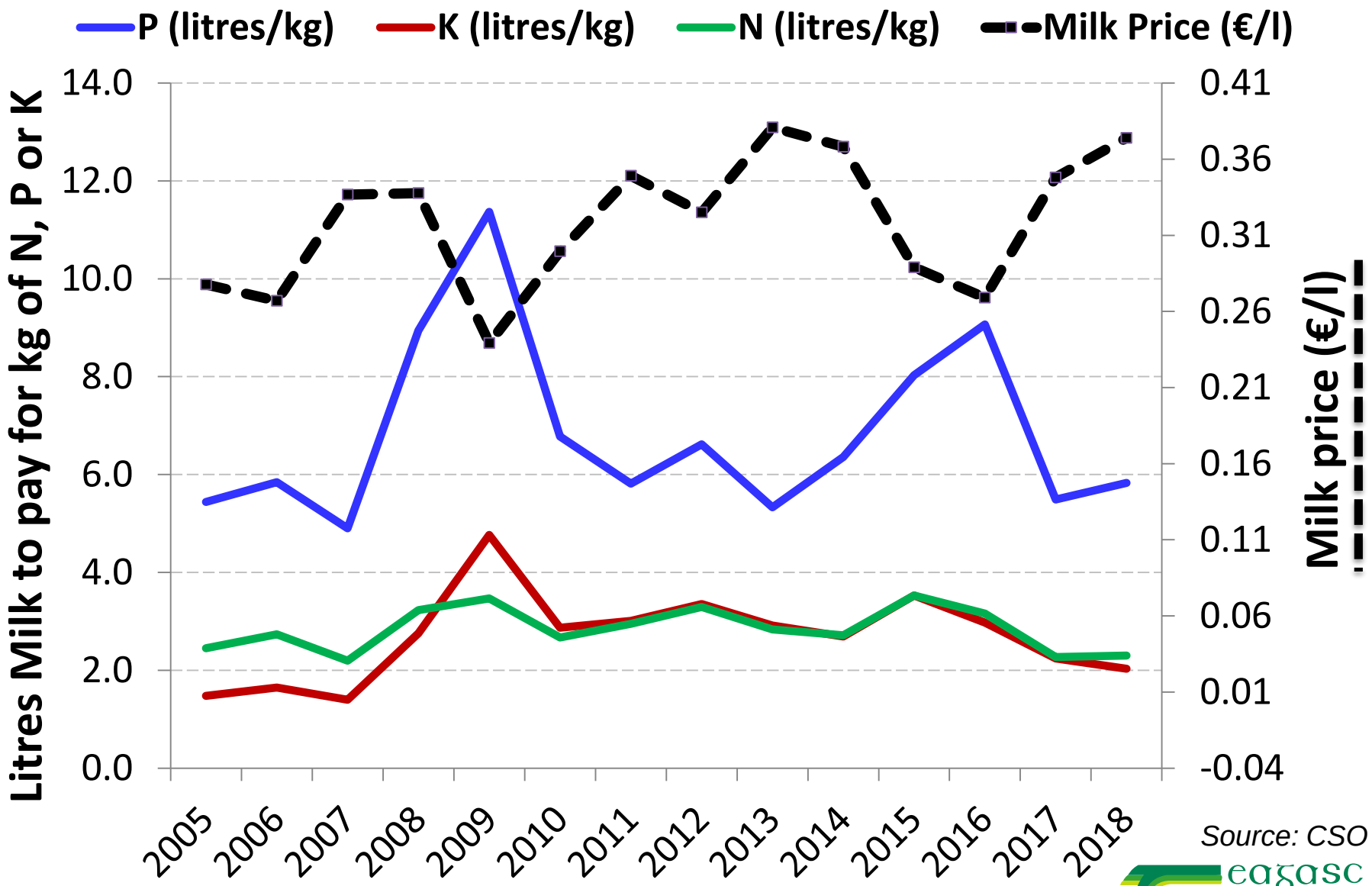
Impact of Farm prices: Milk



Source: CSO

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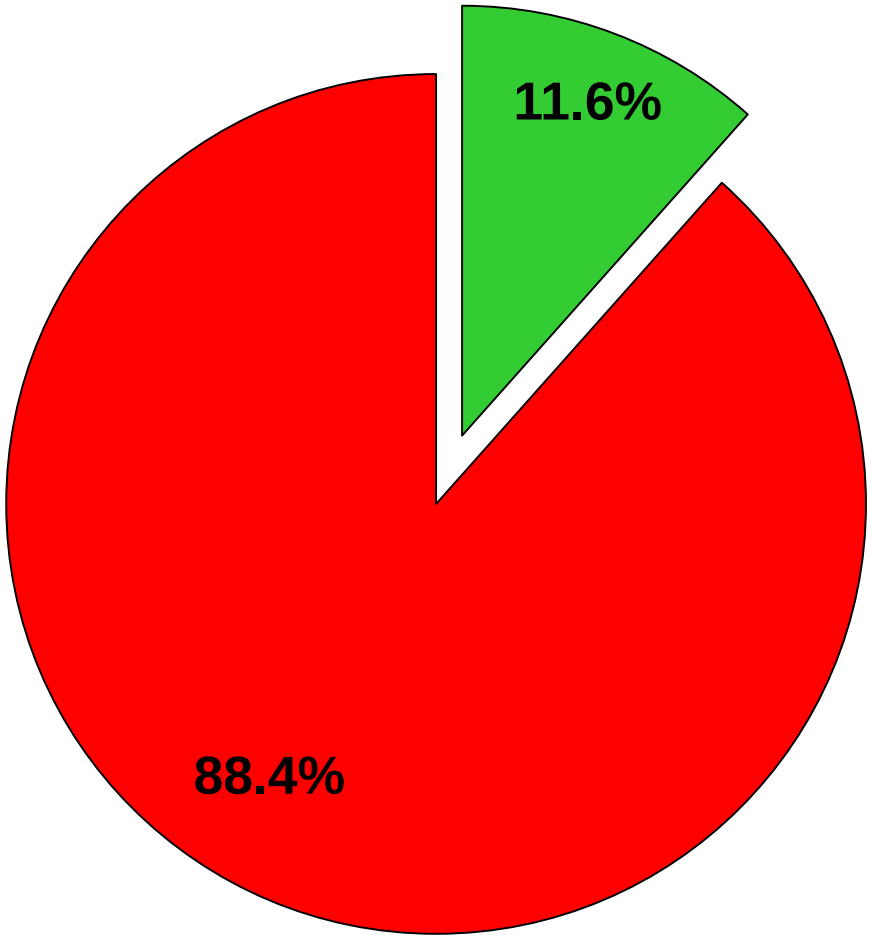
National Soil Fertility - 2016

Soils with Optimum Fertility (pH ≥ 6.3, P & K Index ≥ 3)



Soil Fertility 2016

199,545 samples

- 55% low in P
- 50% low in K
- 66% low pH (<6.3)

Source: DAFM / Teagasc

- **Soil fertility meeting crop production targets**
- **Deficient soil fertility**

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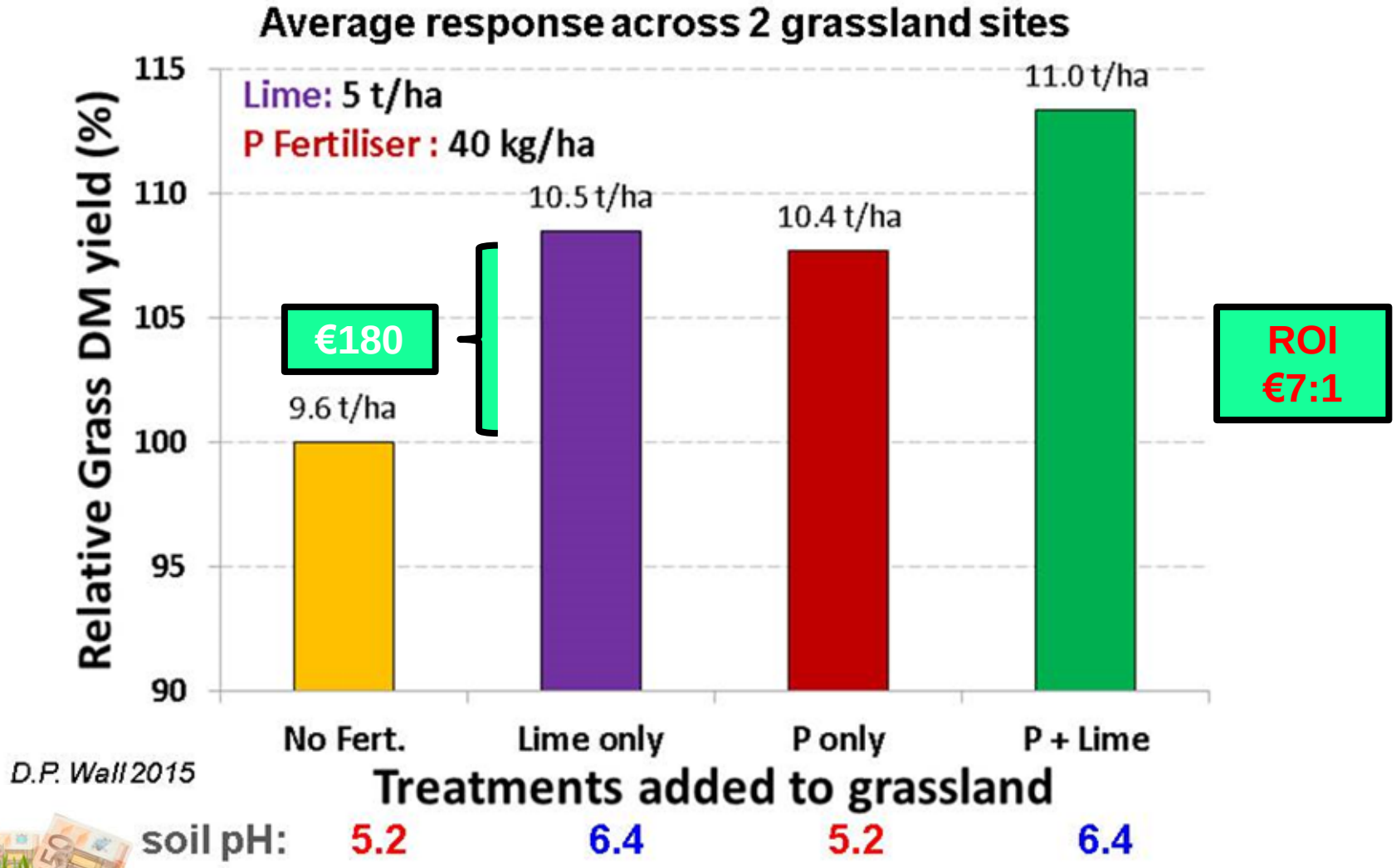
Lime: How Much Extra Grass Produced?



Return on investment of €4 -7 in extra grass for every €1 in lime!

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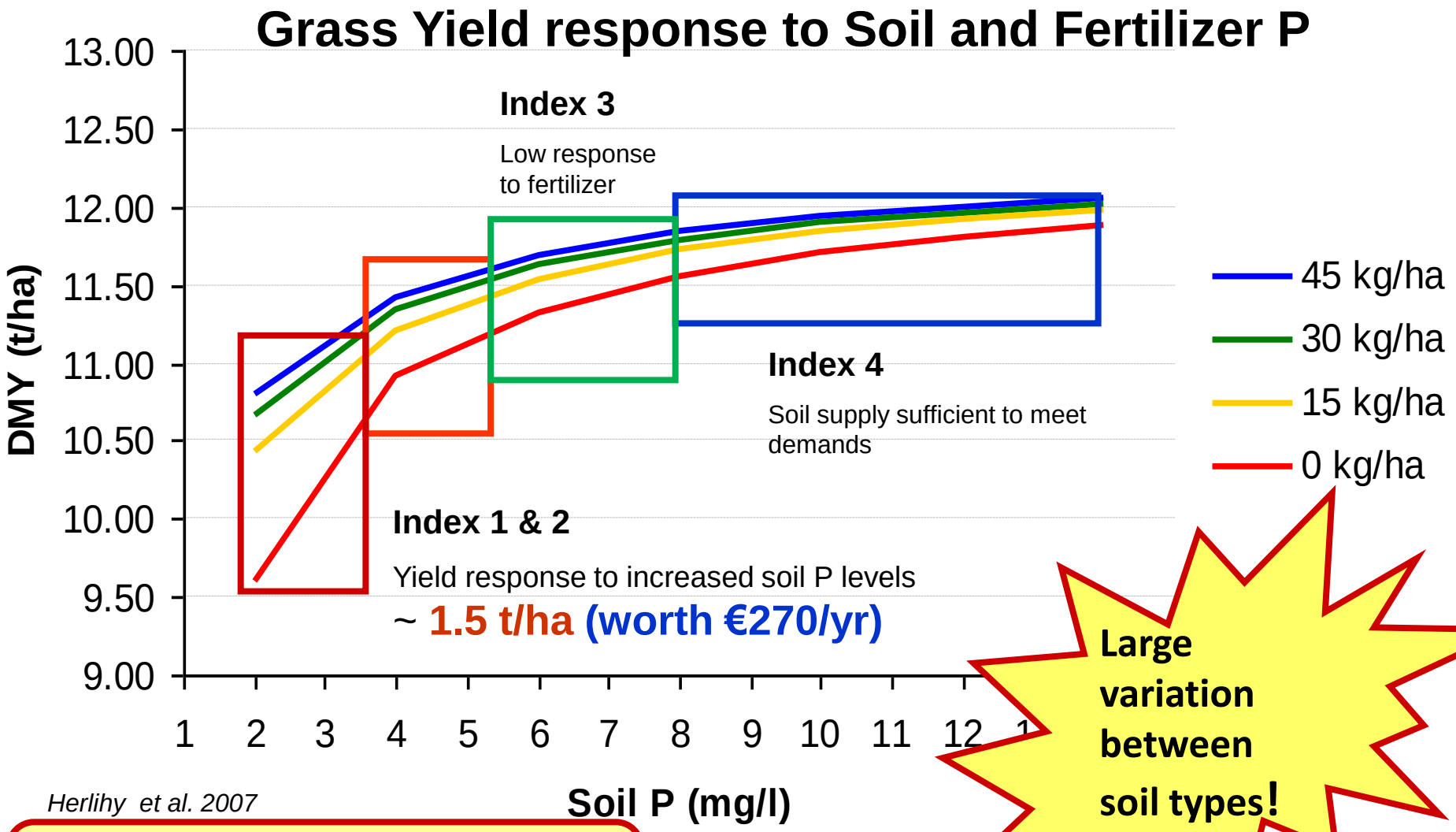
Why Build Soil P & K Fertility?



Herlihy et al. 2007

Large variation between soil types!

K – Similar response in silage (1-3 t/ha/yr)

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Soil Fertility: *to Build or not to Build ???*

- Is it cost effective to build soil P (or K) ?
- Soil fertility build-up: *Increased P build-up option*

Irish studies showing the soil test P response to build-up P applications		
Reference Studies Conducted across a range of soils	**Land Use type**	**P build-up required to achieve 1mg/L STP**
Culleton et al. 2001 Long term Cowlands, Johnstown Castle	Grassland (grazing – beef)	59 kg/ha P for Index 1
Sheil *et al.,* 2016, Long term P fertiliser study	Grassland (simulated grazing)	56kg/ha P for Index 1 40 kg/ha for Index 2
Wall *et al.,* 2017, Heavy soils study (5 dairy farms)	Grassland (grazing – dairy)	76 kg/ha at P Index 1 50 kg /ha at P Index 2

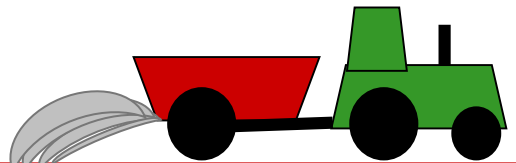
Cost of lost production in Index 1 & 2

- Same Example
  - Dairy – 2 cows / ha
  - Index 3 Fertilizer advice (grazing) = 13 kg/ha P & 35 kg/ha K
  - Cost of maintenance P & K **= €60 /ha/yr**

- Production loss in Index 1 vs. Index 3 for P &K
  - Approx. 3.0 t/ha/yr of additional grass DM produced
  - Increased grass production **= €540/ha/yr**

- Additional P & K for build up = 50 kg/ha P & 60 kg/ha K
  - Additional Fertilizer Cost = **€160/ha/yr** until soil P / K increases
  - Long-term investment – benefits of increasing to Index 3

Soil pH needs to be right as well !



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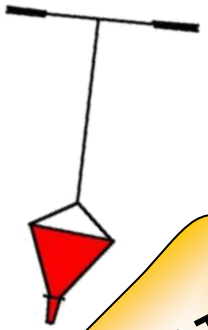
Steps to Soil Fertility Management

Information

Interpretation

Index	Description
1	Very Low
2	Low
3	Target
4	High



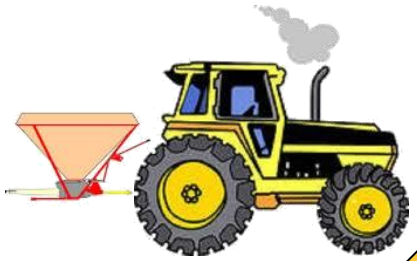
1) Soil Test

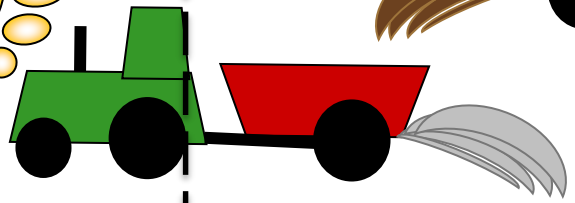
2) Soil pH

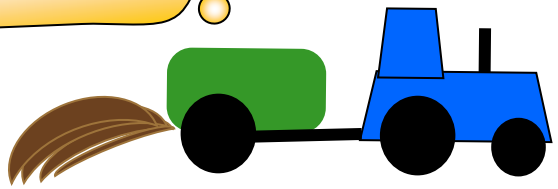
3) Index 3

4) Slurry

5) Balance







Action

Opportunity!

Use tools/ technologies to improve decision making

Fertiliser Planning

NMP Online Soil Fertility Summary

https://www.teagasc.ie/environment/soil/nmp/

Soil Fertility Summary

Overall Fertility Status

pH > 6.2, P & K index 3 or 4

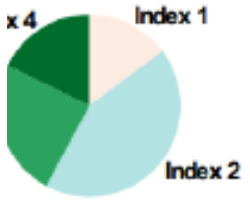
	Ha's	%
Yes	0.00	0%
No	32.86	100%

%reduction in farm capac

pH, P and K

23

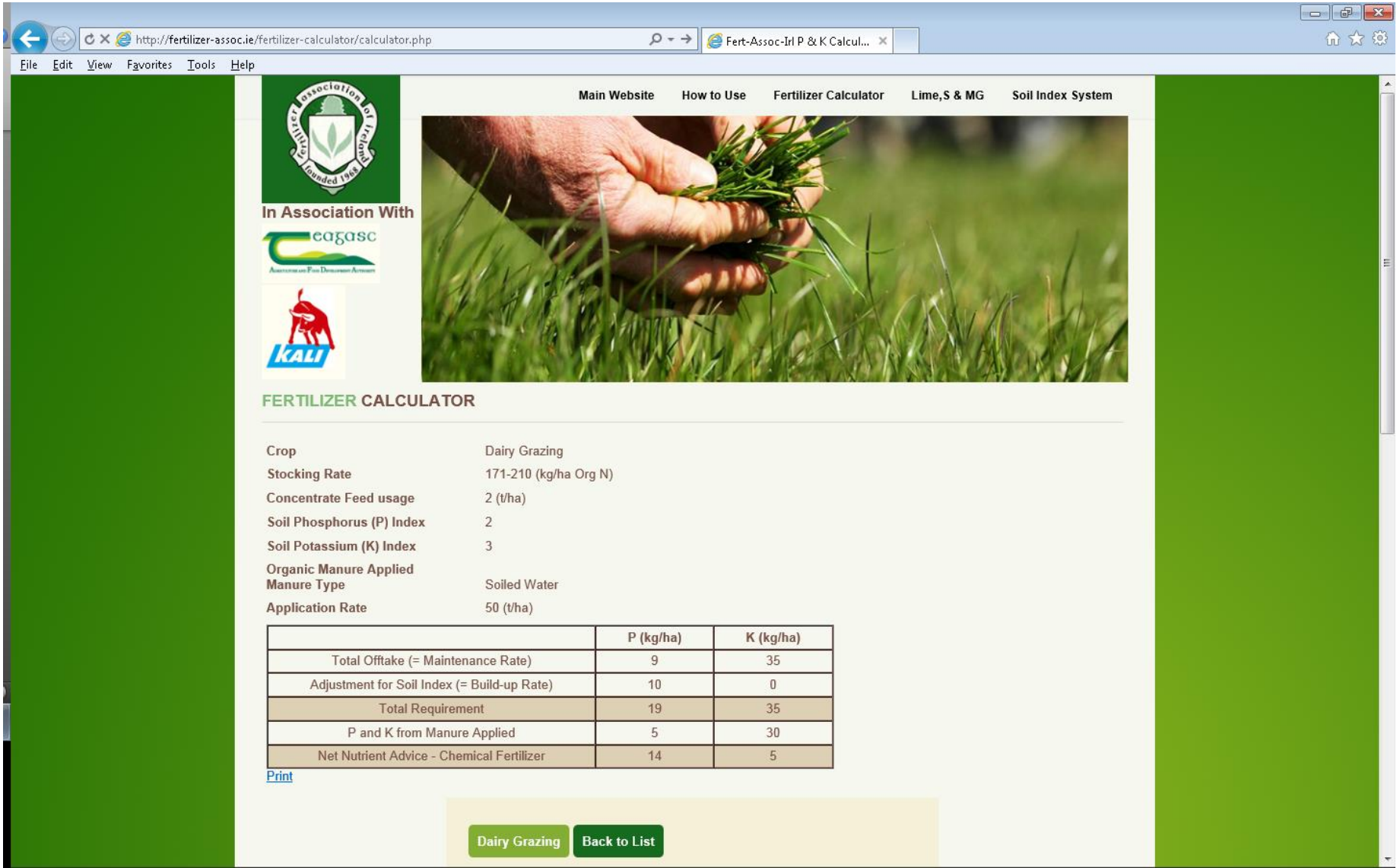
NMP Online – Lime Requirement



Ha's	%
4.37	15%
14.15	43%
8.00	24%
5.84	18%

Calculating Offtake

- http://fertilizer-assoc.ie/fertilizer-calculator/calculator.php



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HELP CENTRE

IRELAND GRASS GROWTH

Last Updated 08/04/2018
kg DM / ha / day
See Detailed Map

Reasons to Measure Grass

Inzac - Irish

FARM COVER DETAILS

Cover Date	26/03/2018
DM%	16
Farm Cover (kg DM/ha)	216
Cover/LU (kg DM/LU)	73
Growth/Ha (kg DM/ha)	57
Demand/Ha (kg DM/ha)	28
Demand/Day (kg DM/day)	144
LU/ha (LU/ha)	2.95
Days Ahead (days)	8
kg LWT/ha (kg/ha)	886

VIEW WEDGE

Tweets by @PastureBase

PastureBase Ireland Retweeted

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A farm walk will take place on Wednesday, 18 April on the farm of Eddie O'Donnell, Overall Winner of the Grass10 Farmer of the Year Competition. Find out more about the walk here ow.ly/nQlE30jlODc

Apr 6, 2018

PastureBase Ireland Retweeted

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@teagasc

Soil Fertility Management Targets

- Have soil analysis for whole farm
- Soil pH between 6 and 6.5 in all fields
- P and K Index 3 in all fields
  - Index 4 is a resource → Exploit it
  - Index 1 & 2 → identify and nourish
- Optimise slurry first – then top up with fertilizer as required
- Nutrient inputs in proper balance
  - Fertilizer planning is key!
- **Soil fertility & fertiliser is a key investment to maintain a viable farming business!**

https://www.teagasc.ie/crops/soil--soil-fertility/

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