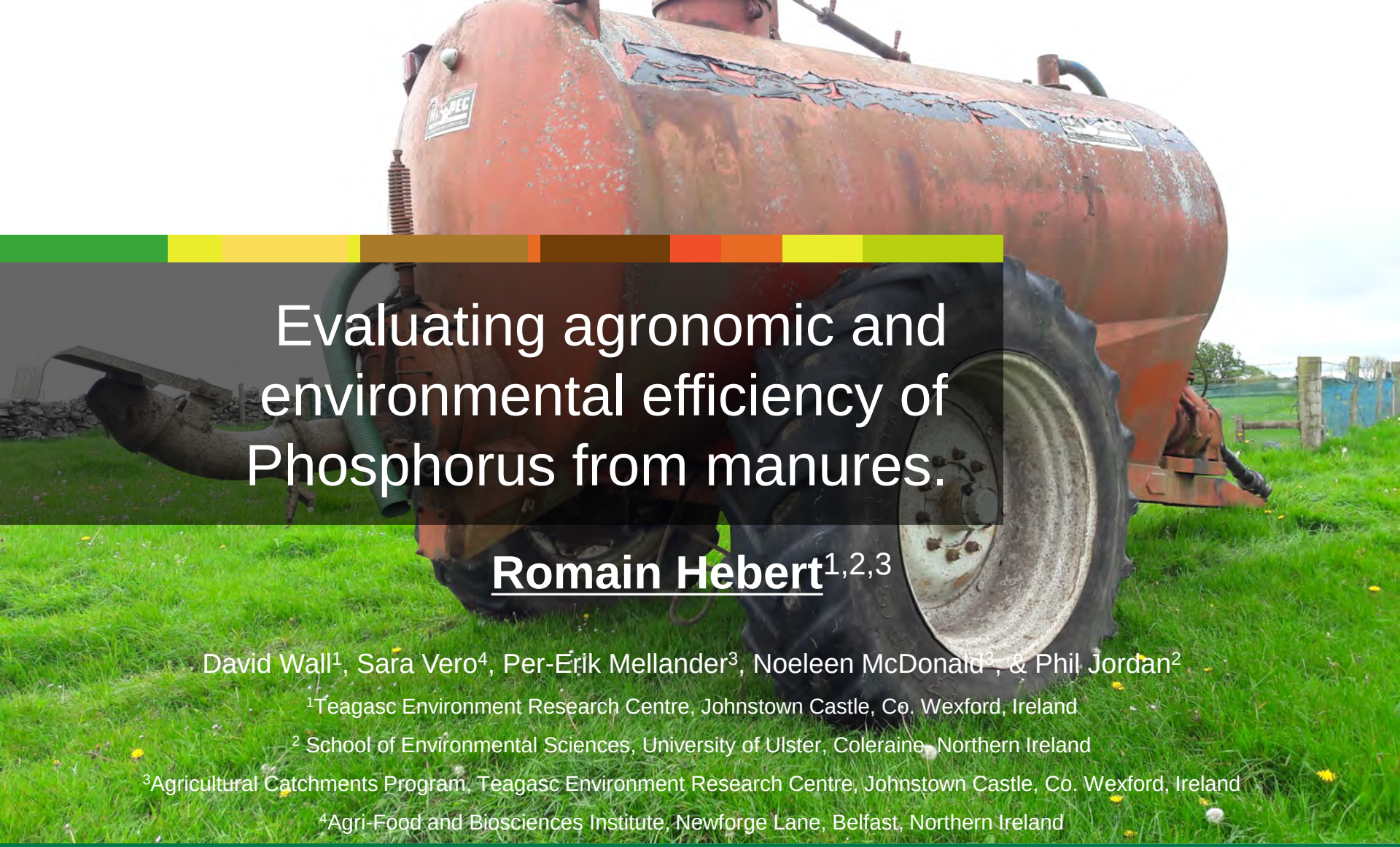

# Evaluating agronomic and environmental efficiency of Phosphorus from manures.


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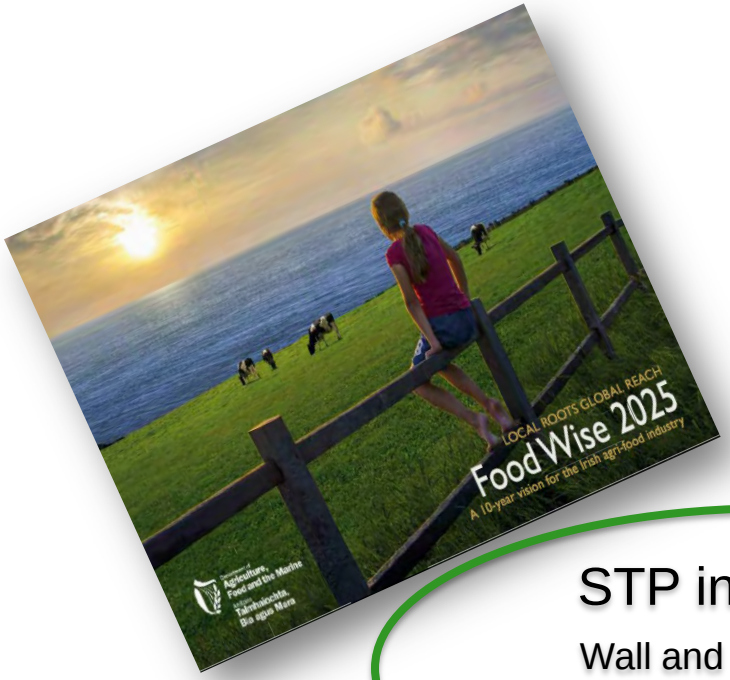
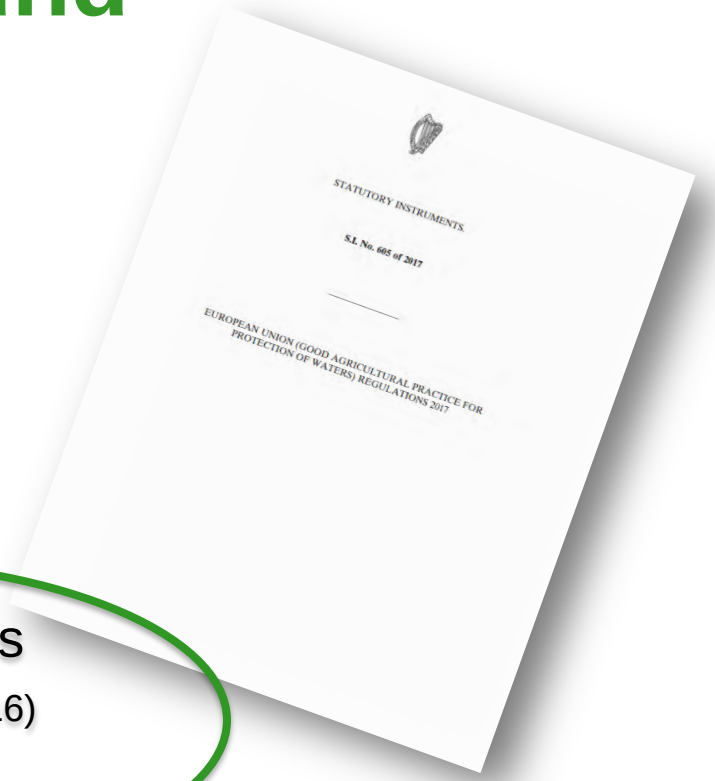
Agriculture and Food Development Authority

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

# Background





STATUTORY INSTRUMENTS.

S.I. No. 605 of 2017

EUROPEAN UNION (GOOD AGRICULTURAL PRACTICE FOR PROTECTION OF WATERS) REGULATIONS 2017

STP index levels

Wall and Plunkett (2016)

(Morgan, 1941)

Influence of manure type on available P pool (Miller et al., 2010)

Influence of soil type on available P pool (Wall et al., 2012; Daly et al., 2015)

# Aim

*To investigate the effect and interactions of organic manure applications with soil P status, soil type and time after application on different soil P pools*

# Materials and Methods

*Soil incubation study*

***Variables***

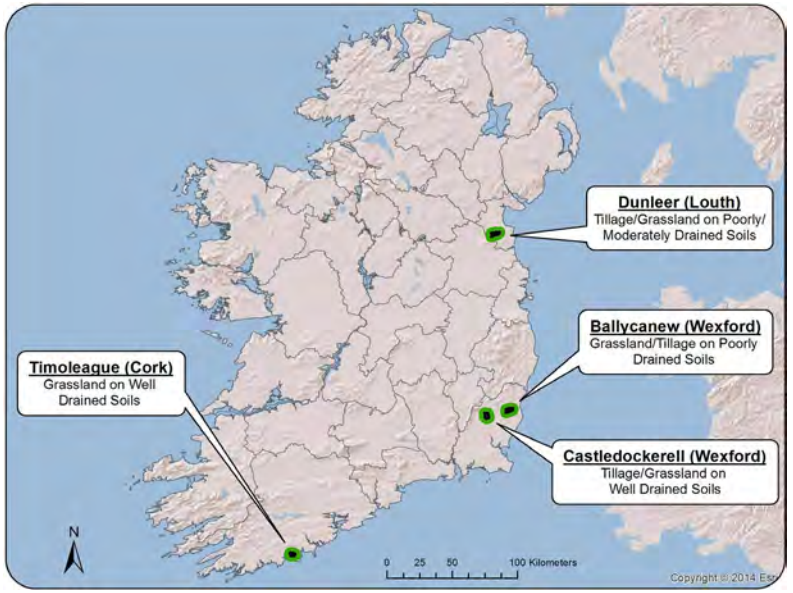
- *3 soil types (@ X2 STP levels)*
- *4 manure types + control*
  - *P Application rate 100 kg/ha*
- *6 sampling times (every 15 d)*

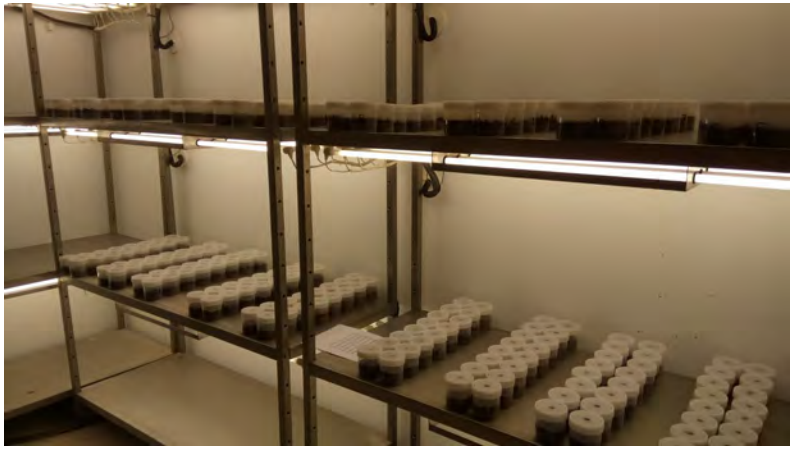
*Environmental conditions:*

- *70% humidity*
- *15ºC*
- *No light*
- *Randomised complete block design*

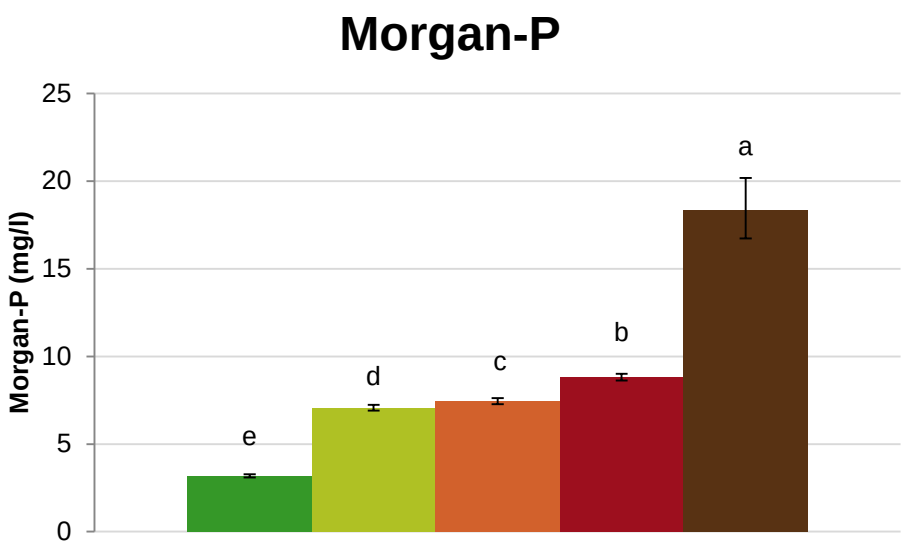
***Response variables***

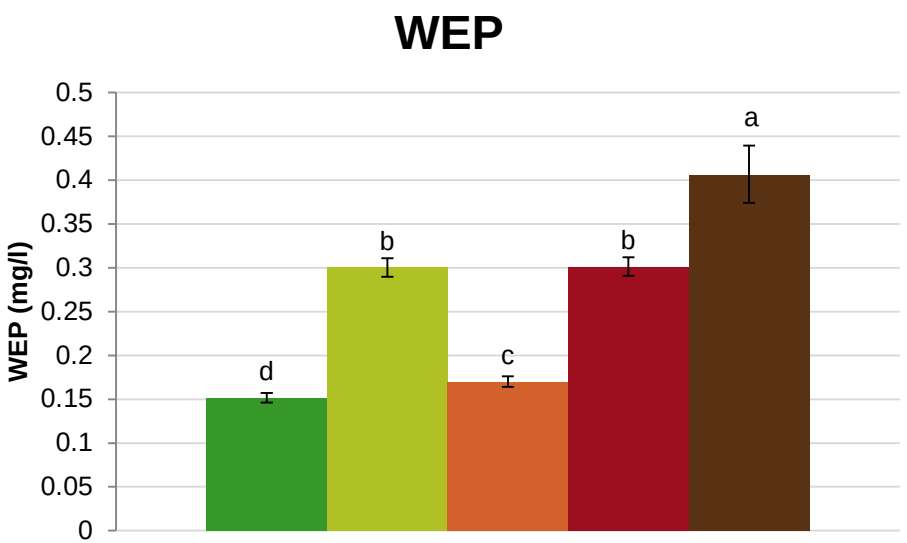
- *Soil test P (Morgan P)*
- *Water Extractable P (WEP)*



# Manure type effect

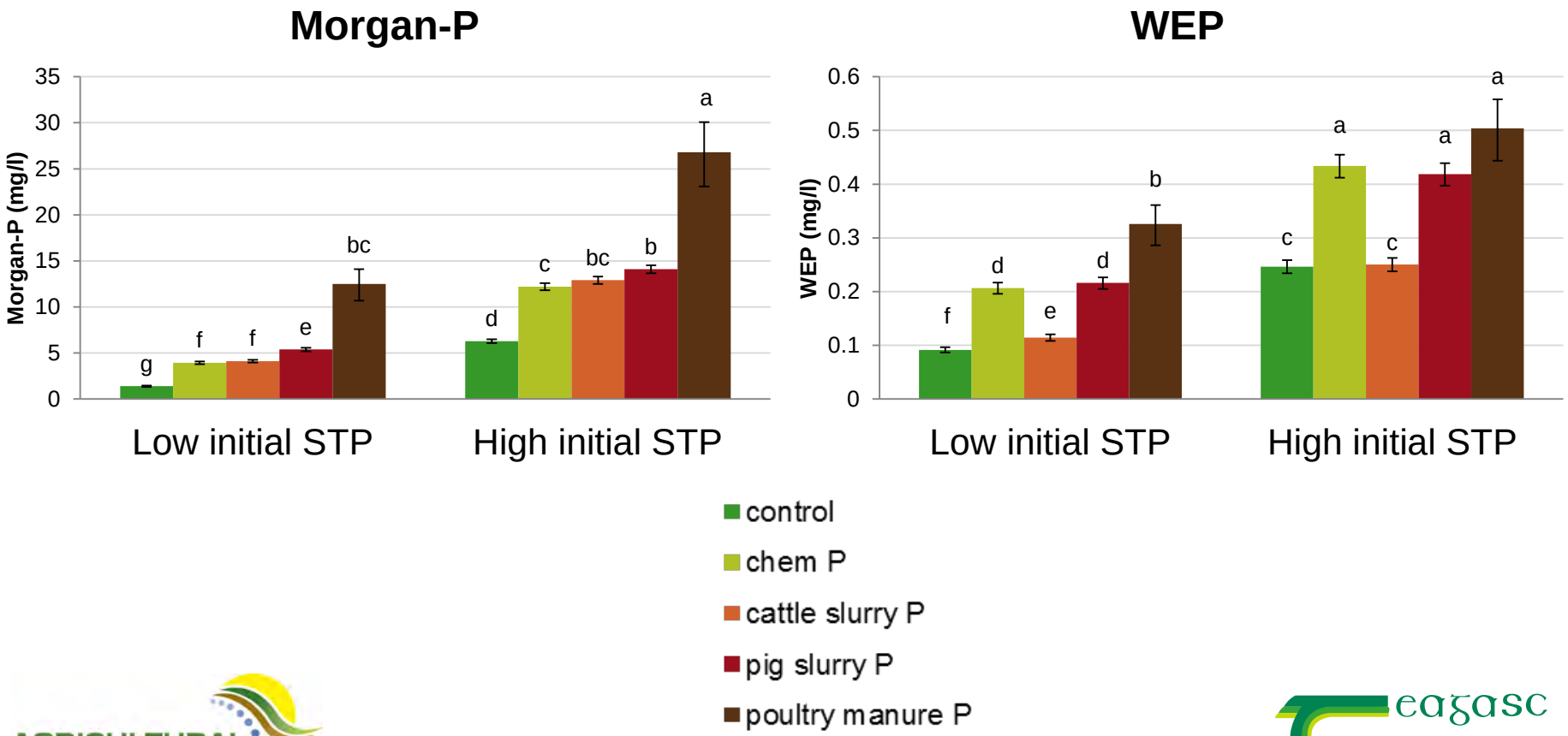


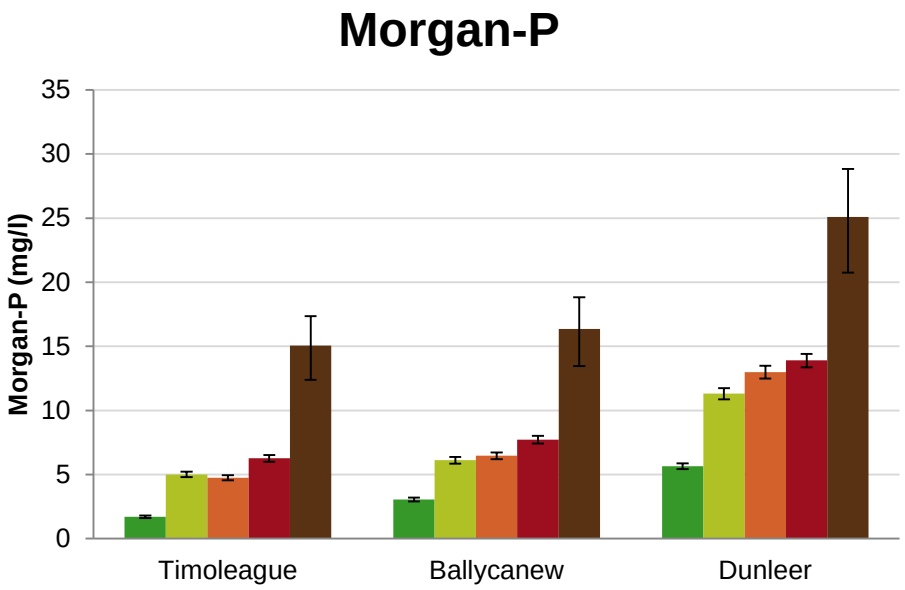

control
chem P
cattle slurry P
pig slurry P
poultry manure P

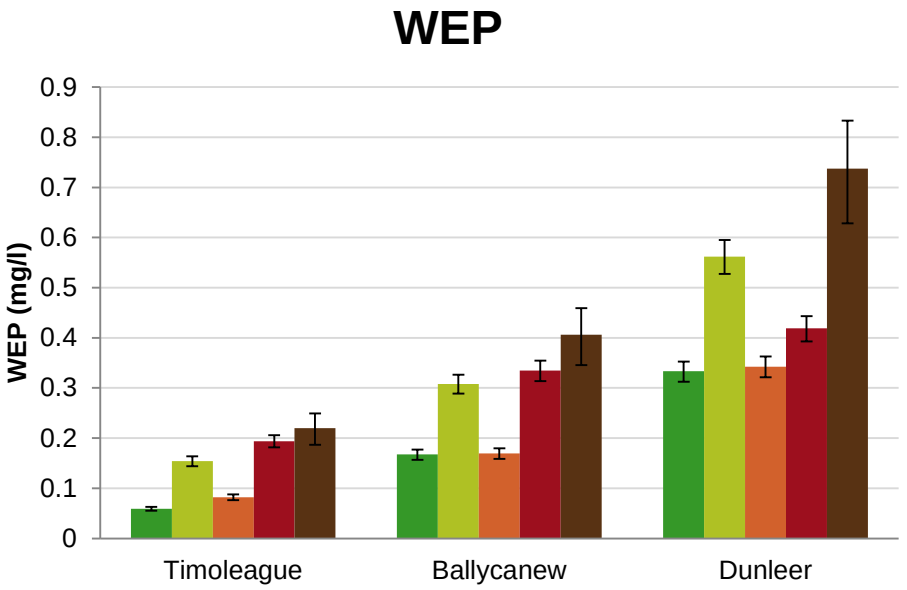
*Application rate 100kg ha$^{-1}$ P*

# Manure type effect on Morgan-P & WEP across 2 initial STP levels



# Manure type effect on Morgan-P & WEP across soil types




| | | | |
|---|---|---|---|
| Mean STPi | 5.4 | 7.0 | 12.5 |
| Clay Content | 16.4% | 28% | 28% |

- control
- chem P
- cattle slurry P
- pig slurry P
- poultry manure P

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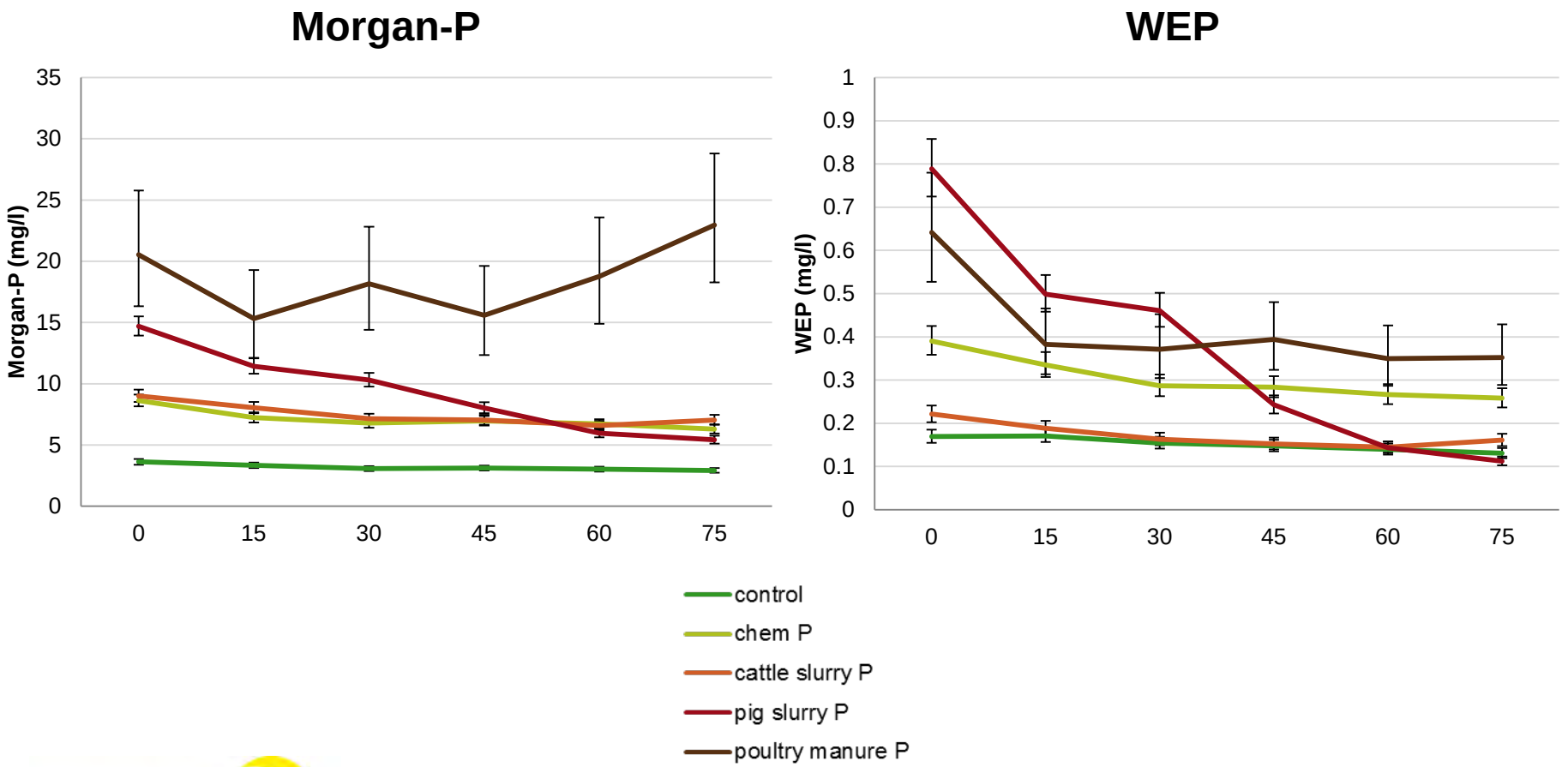
# Manure type effect over 75 days after application



# Conclusions

- Manure type and soil test P level have to be considered for P fertilisation
- Pig slurry and poultry manure should be applied to low P soils and early in the growing season
- Cattle slurry has similar fertiliser P replacement value to chemical P , however, had low P loss risk
- Manure type should be considered in conjunction with timing of application to reduce potential P loss risks to water.