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Scope: Investigate the effect of long-term slurry applications on soil health, nutrient cycling, pathogen loading and fertiliser replacement value over three trial years

Materials and Methods

- Duration: 3 years
- 64 experimental plots 19m x 6m
- Co Down, Northern Ireland (Photo)
- Continuous spring barley
- 12 different amendments

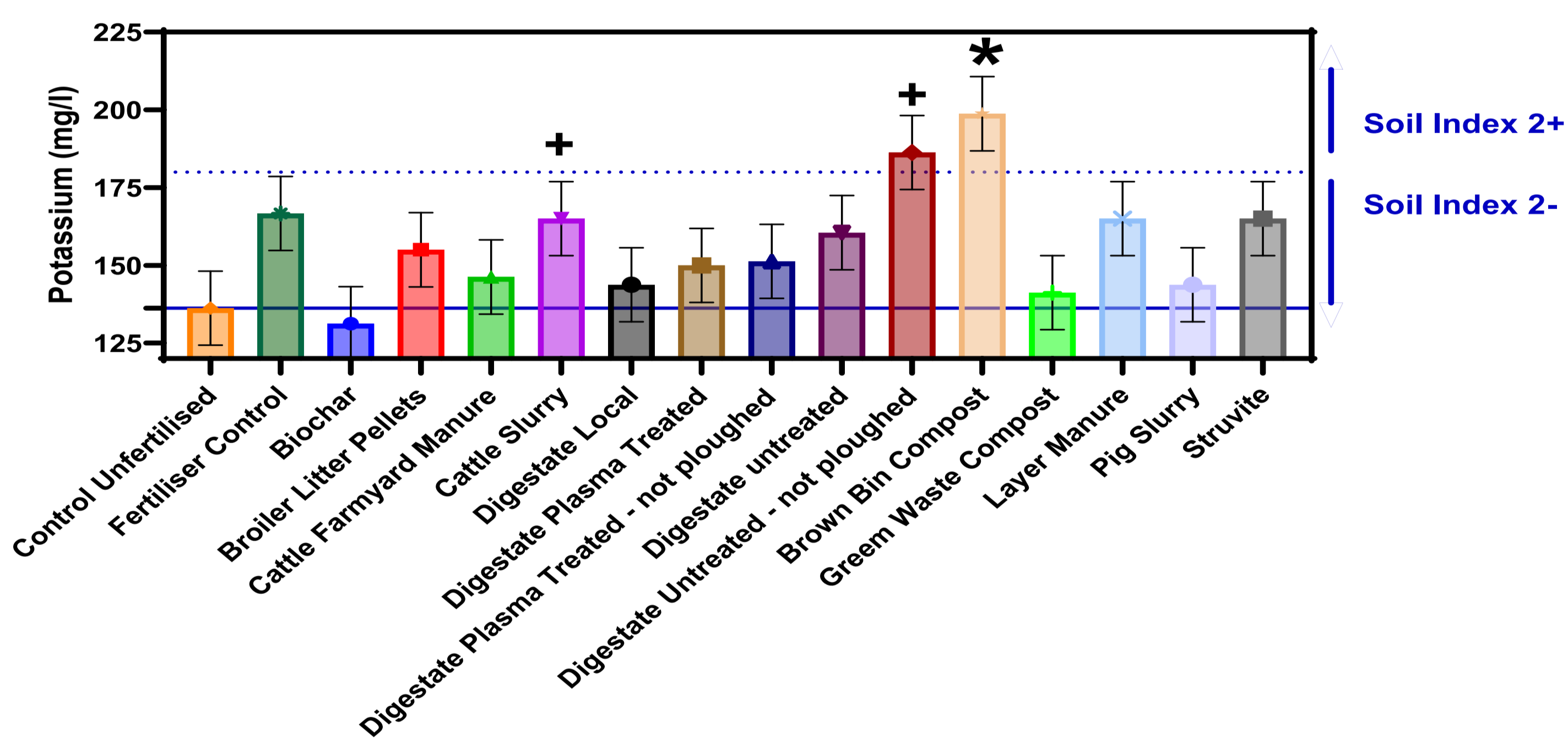
Results

- ❑ **Soil Biology:** No significant effects
- ❑ **Soil Chemistry:** Significant impact on soil phosphorous, potassium, pH and sulphur
- ❑ **Soil Structure:** No significant effects
- ❑ **Yield:** See graph

Table 1. Organic materials, rates and incorporation method

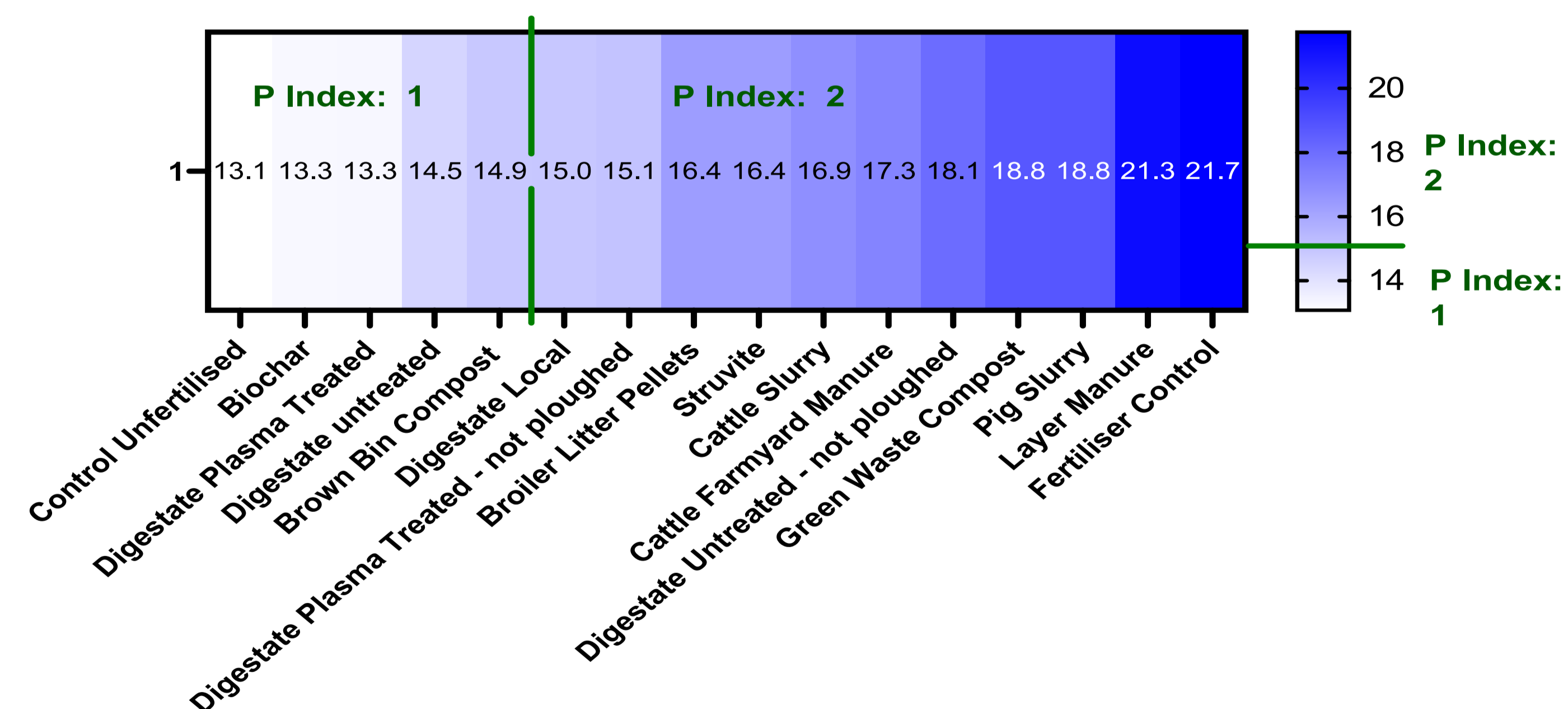
Amendments	Rate (t/ha)	Incorporation Method
Biochar	3.3	Ploughed in
Broiler Litter Pellets	6.3	Ploughed in
Cattle FYM	21	Ploughed in
Cattle Slurry	50	Ploughed in
Brown Bin Compost	35	Ploughed in
Green Waste Compost	18	Ploughed in
Digestate Untreated	34	Ploughed in
Digestate Untreated	34	Non-incorporated
Digestate Fibre	21	Ploughed in
Layer Manure	21	Ploughed in
Pig Slurry	50	Ploughed in
Plasma Treated Digestate	31	Ploughed in
Plasma Treated Digestate	31	Non-incorporated
Struvite	0.36	Ploughed in
Fertiliser Control	-	Non-incorporated
Control Unfertilised	-	-

Soil potassium levels following the various treatments (mg/l) (ammonium nitrate extract)



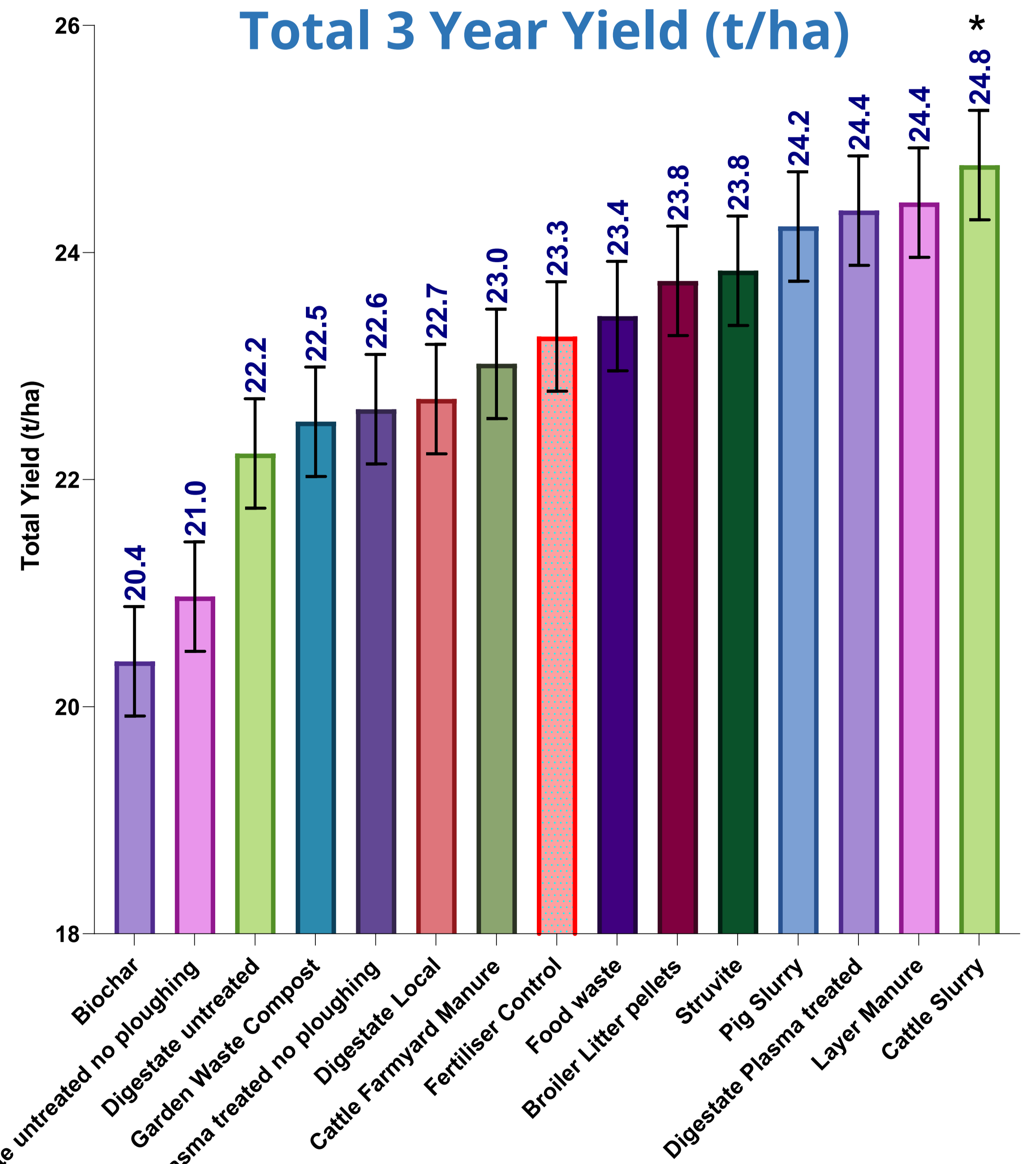
Line at 136 mg/l is shown to indicate the effect of treatment compared to untreated control
 Error bars indicate standard error of the difference (SED)
 * indicates significantly different to both control unfertilised and fertiliser control
 + indicates treatments significantly different (P<0.05) to the control unfertilised

Soil Phosphorous (P) (mg/l) (Olsen method)



Average standard error of the difference (SED) = 2.04
 Treatment significantly (P<0.001) impacted soil P with significant (P<0.05) differences found between treatments

Total 3 Year Yield (t/ha)



* Cattle slurry was significantly higher than that of the fertiliser control



Next steps:

- ❑ Measure Solvita respiration
- ❑ Calculate fertiliser replacement value
- ❑ Calculate nutrient efficiency
- ❑ Produce final report