

# Soil Fertility Trends in the ACP

Edward Burgess & Simon Leach

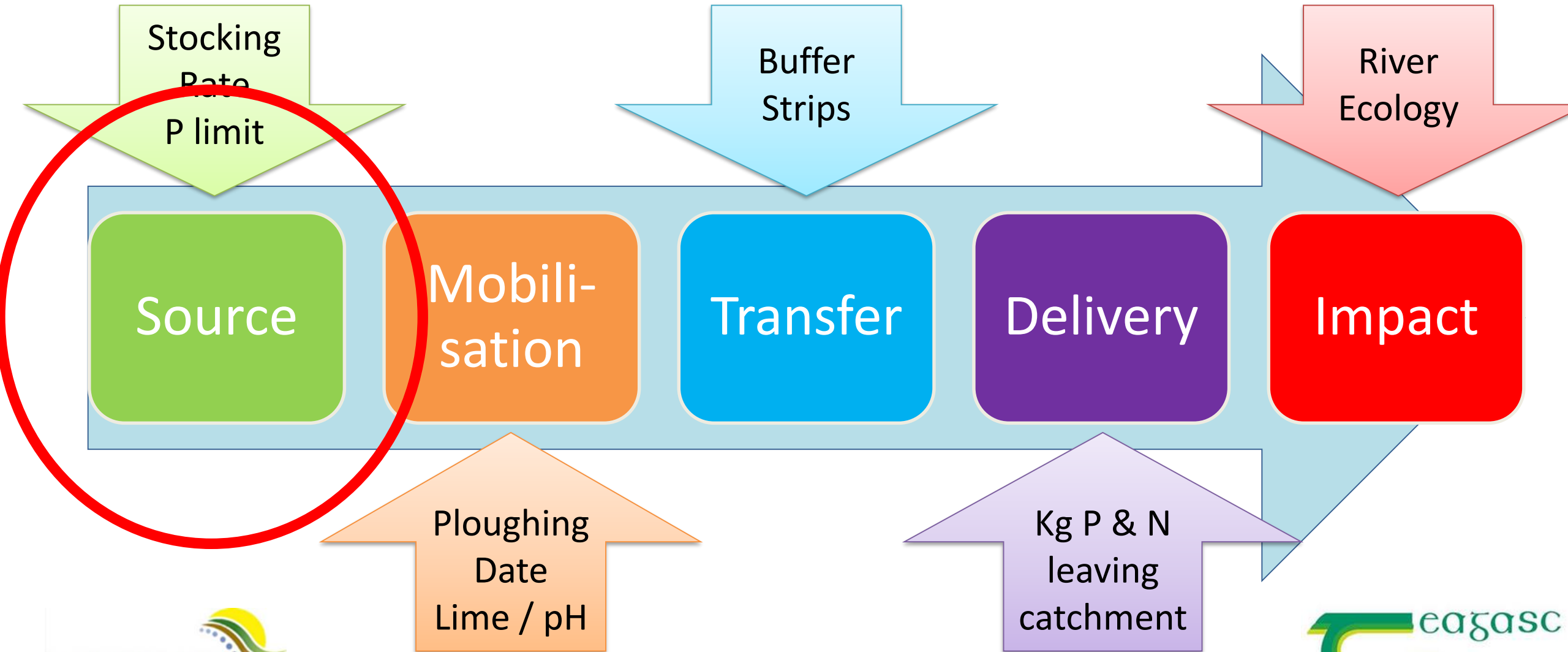
Teagasc's Agricultural Catchments Programme



# Presentation Overview

- Why the Agricultural Catchments Programme sample soils
- Procedure undertaken in the ACP for soil analysis
- Trends in three catchments over 12 years
  - Four sampling campaigns
  - Enterprise & Catchment comparison
- Phosphate, Organic Manures , pH & Soil Type

# Approach taken by ACP



# Soil Sampling Procedure

- ca. 2 hectare sampling area
- 4 year cycle 2019/'10 ➤ 2013/'14 ➤ 2017/'18 ➤ 2021/'22
  - Same area sampled each time
- GIS data base
- pH, Buffering capacity (lime), P, K, Carbon (OM)
- Research, Advisory & Farmer use

**Cregduff**  
Well Drained Soils on  
Grassland

**Corduff-Sreenty**  
Poorly Drained Soils  
Grassland

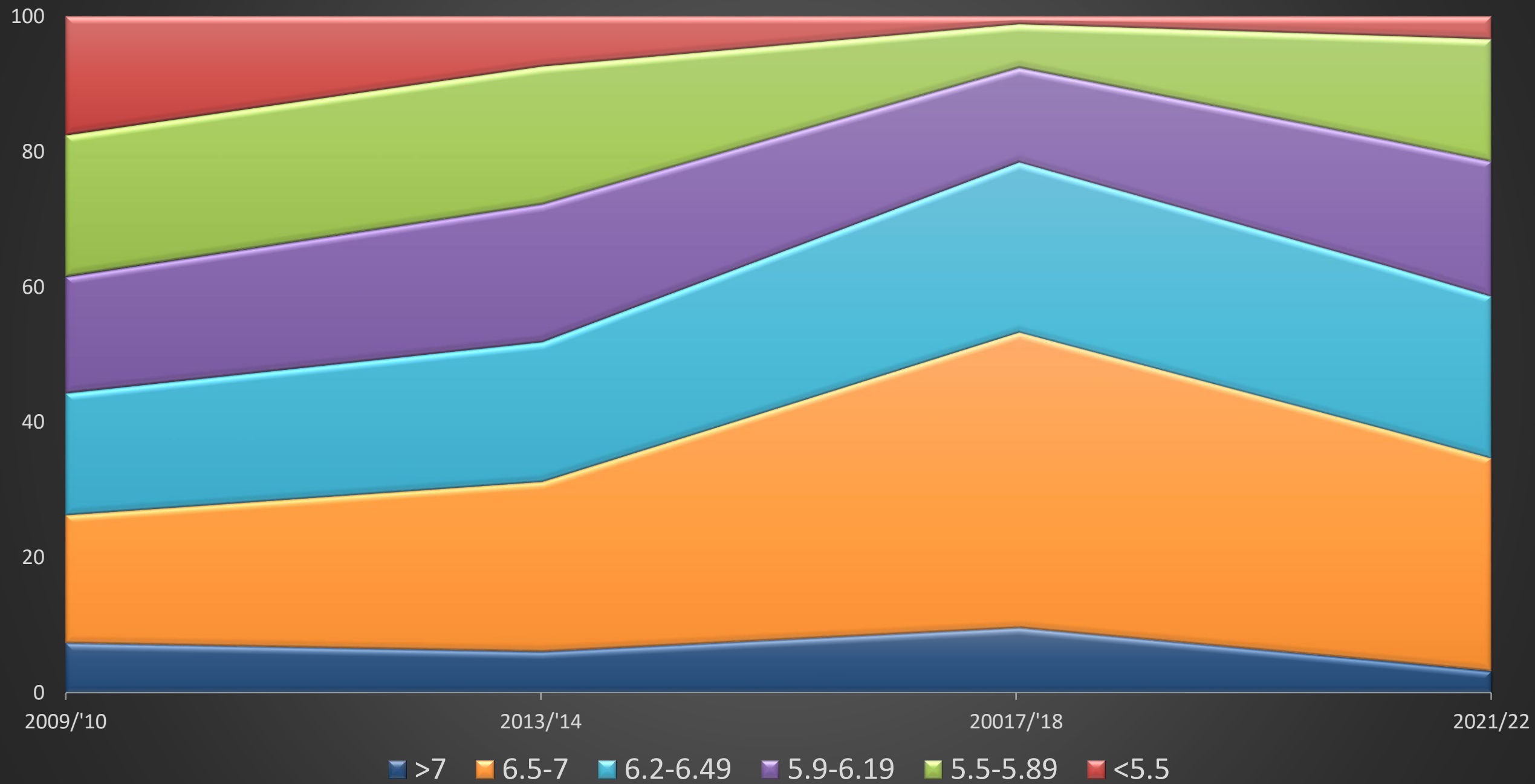
**Dunleer**  
Poorly Drained Soils  
Tillage / Grassland

**Ballycanew**  
Poorly Drained Soils  
Grassland / Tillage

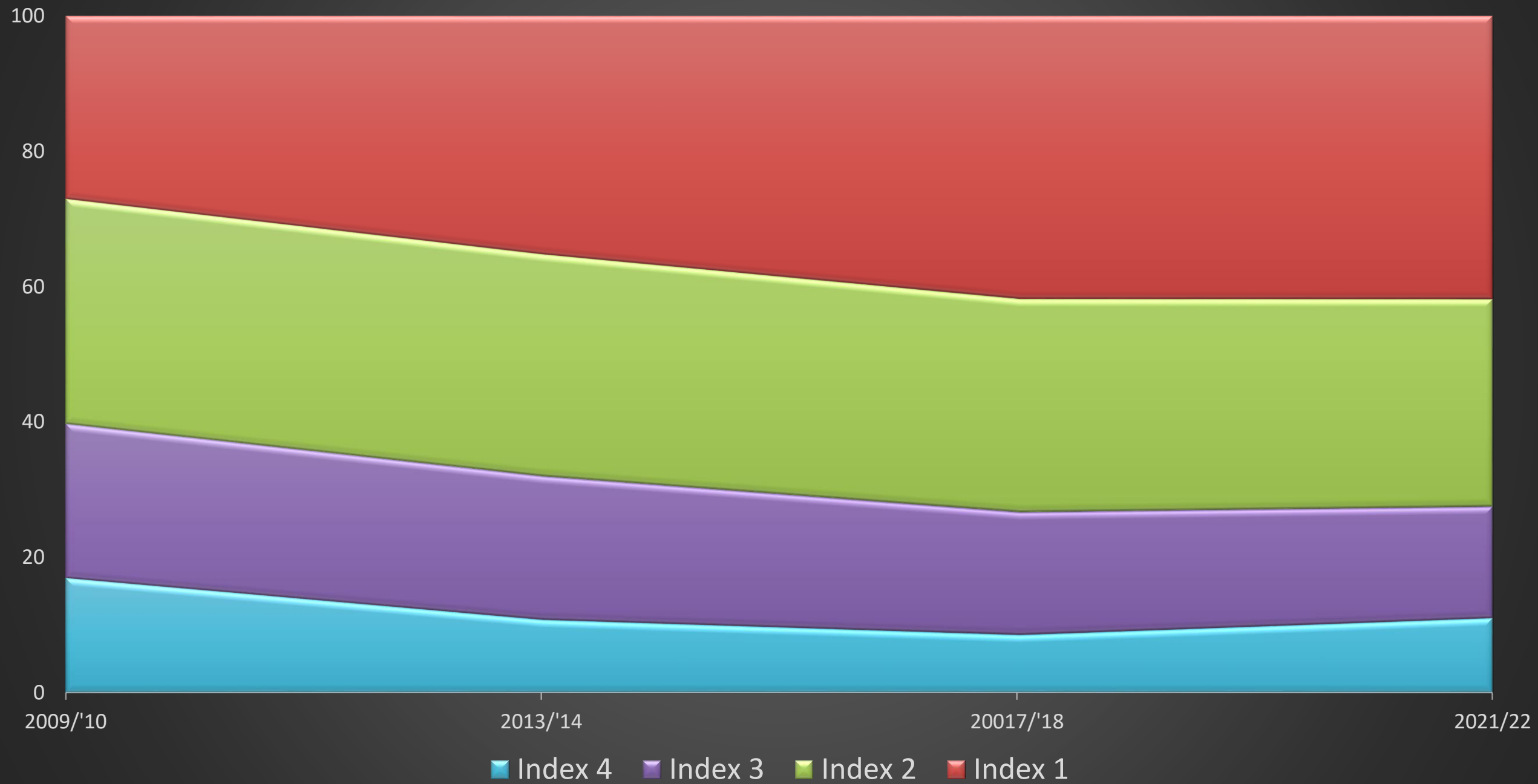
**Timoleague**  
Well Drained Soils  
Grassland

**Castledockrell**  
Well Drained Soils  
Tillage / Grassland

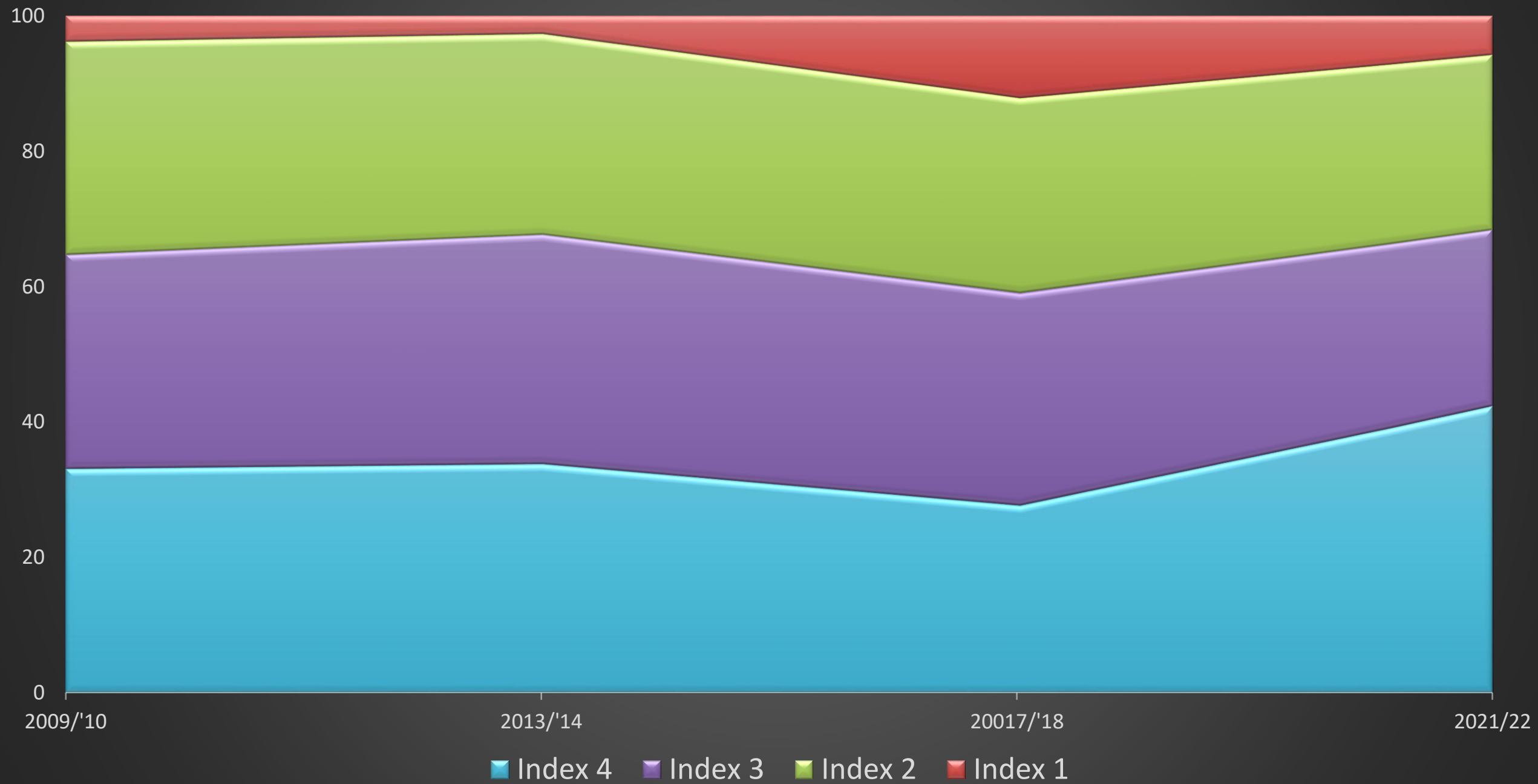
# pH: All Catchment



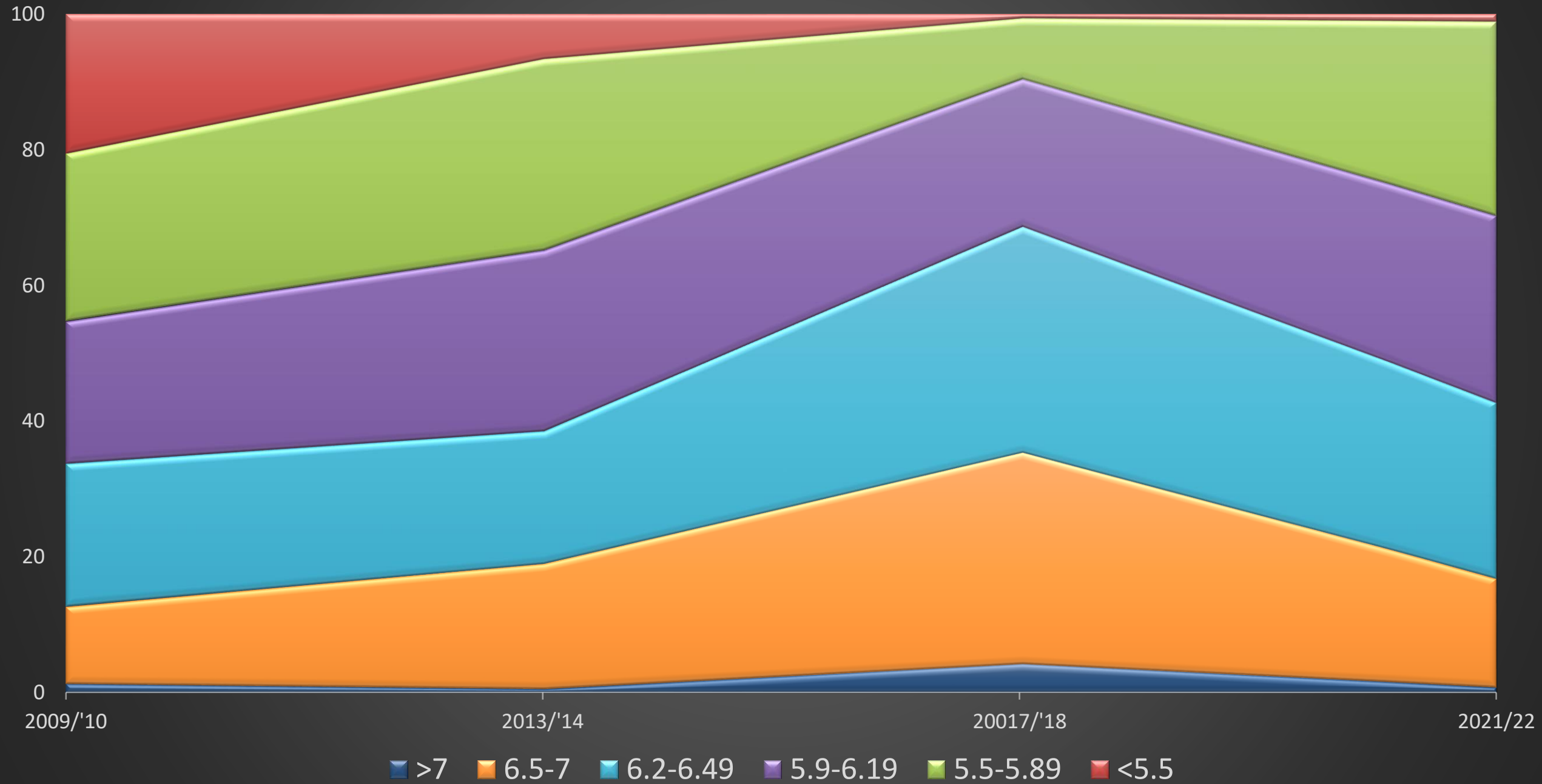
# P Index: All Catchment



# K Index: All Catchment

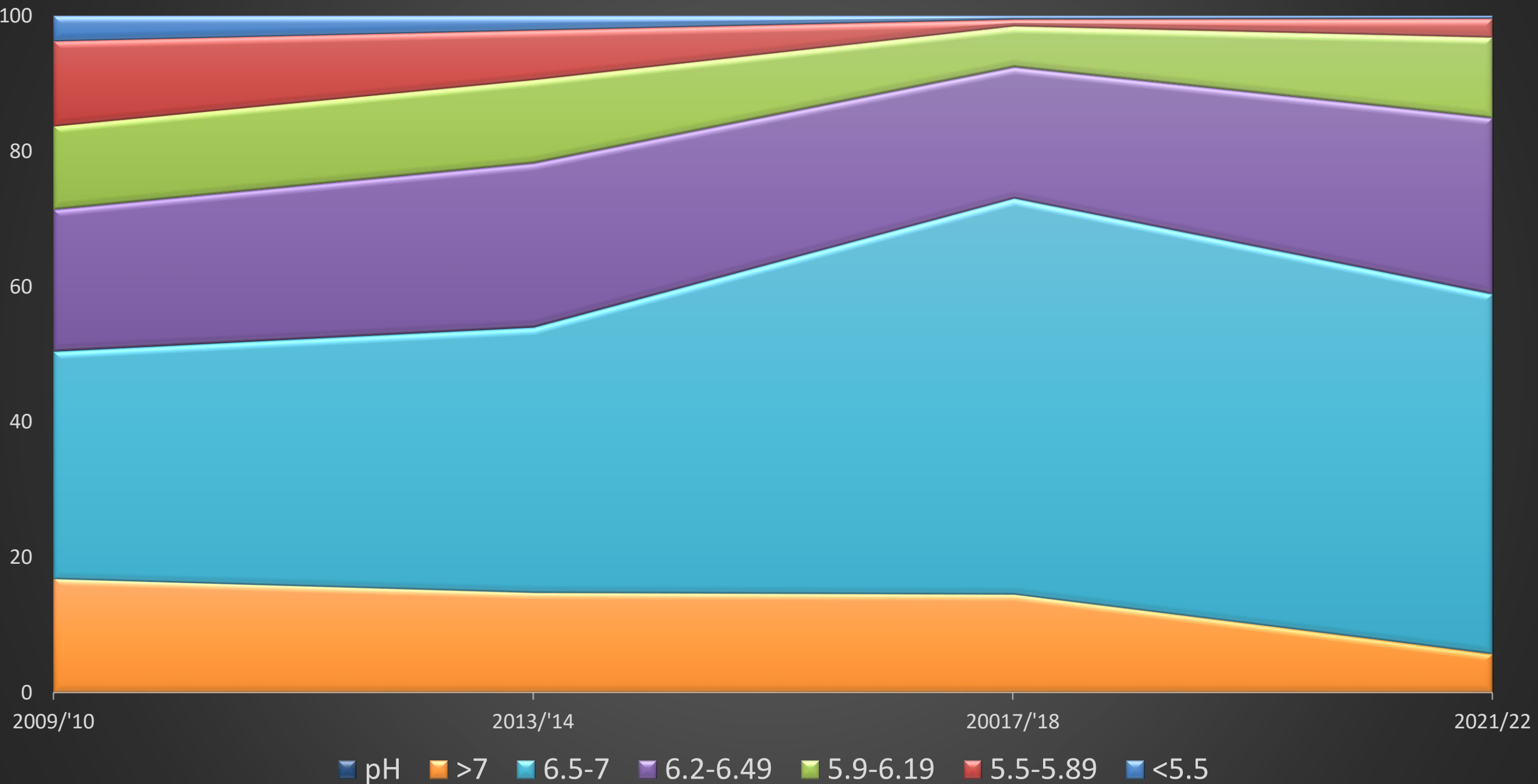


# pH: Ballycanew

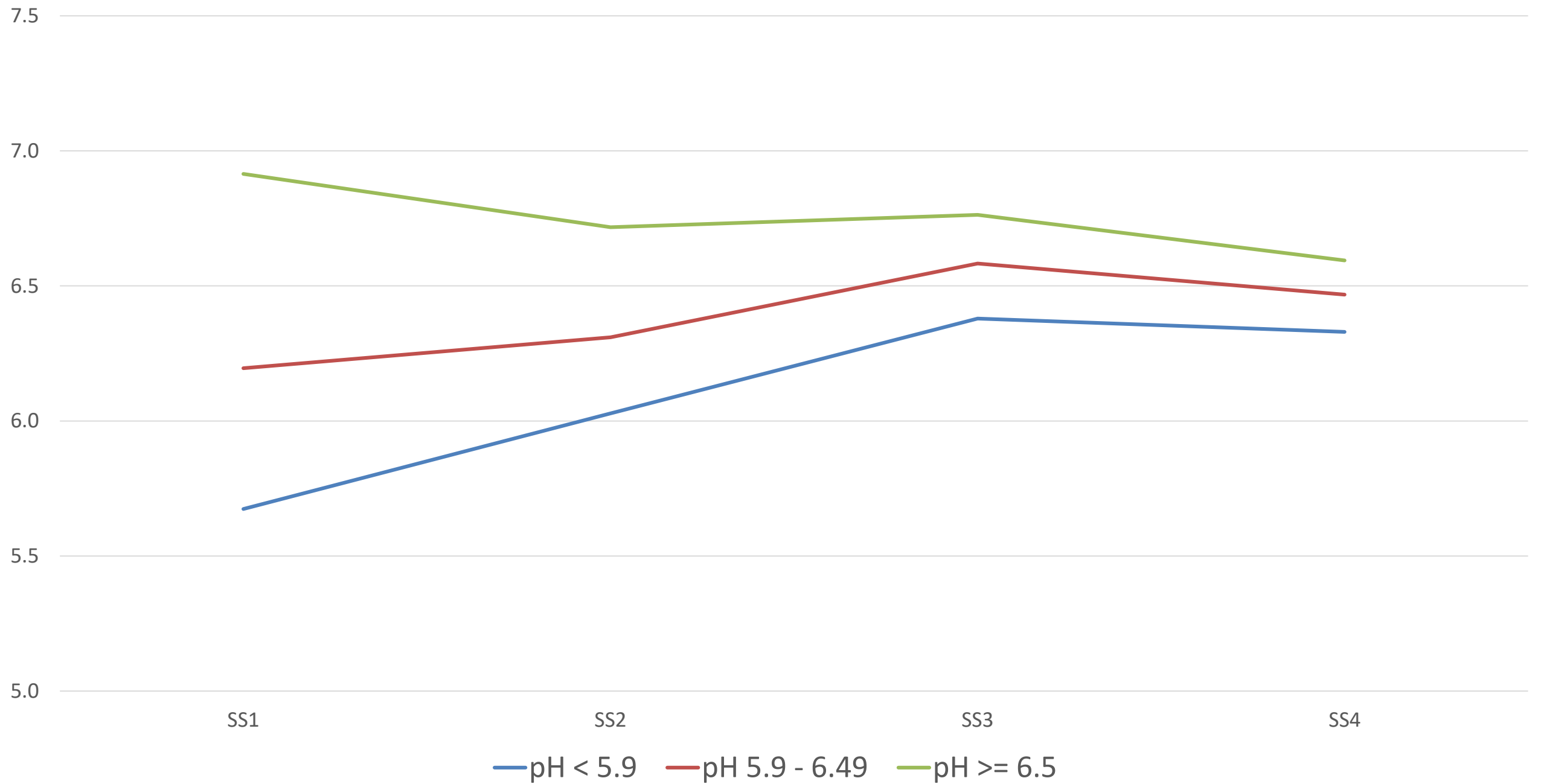




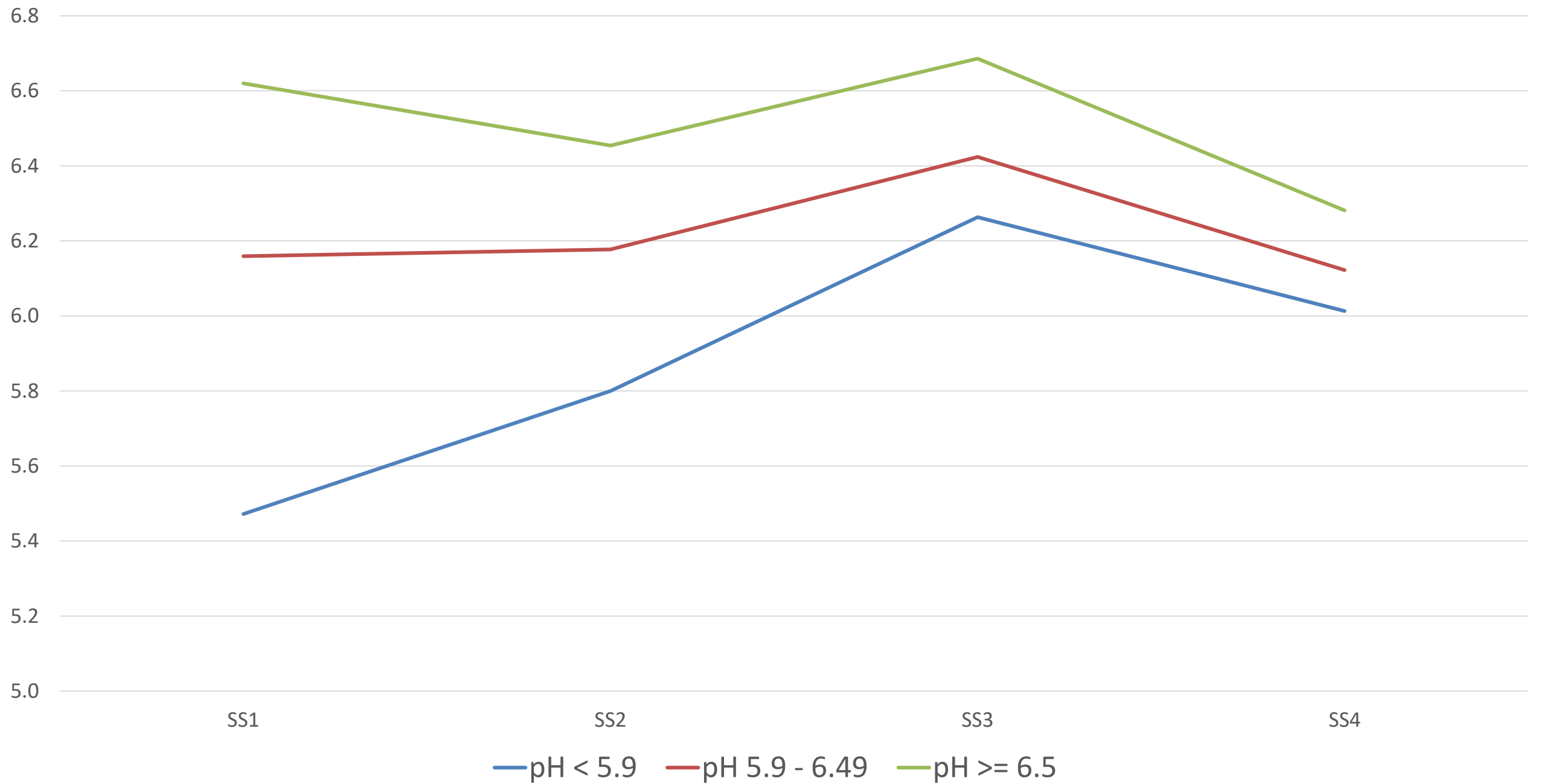
# pH: Castledockrell



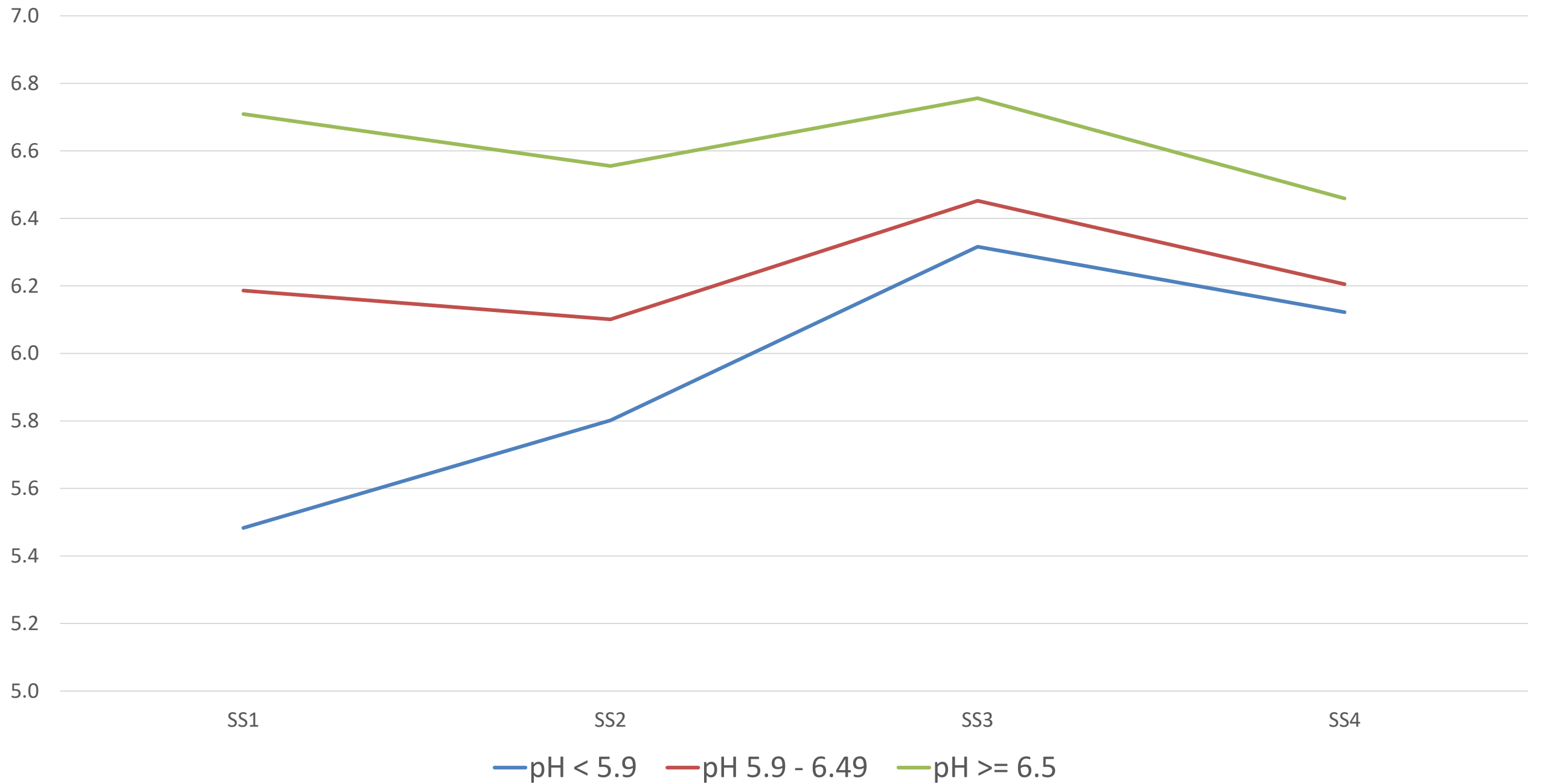
# pH Trends - Tillage



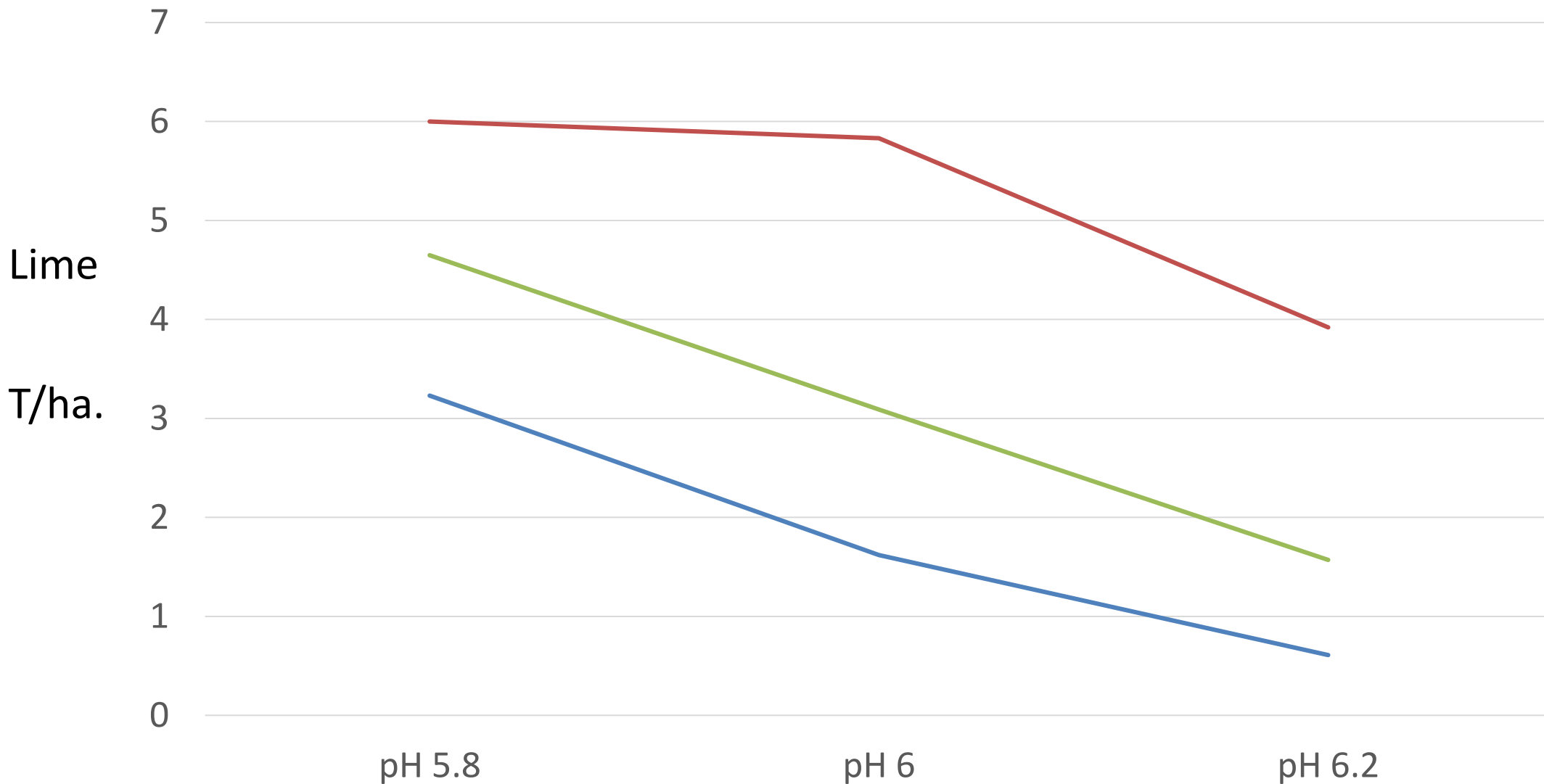
# pH Trends - Dairy



# pH Trends - Drystock

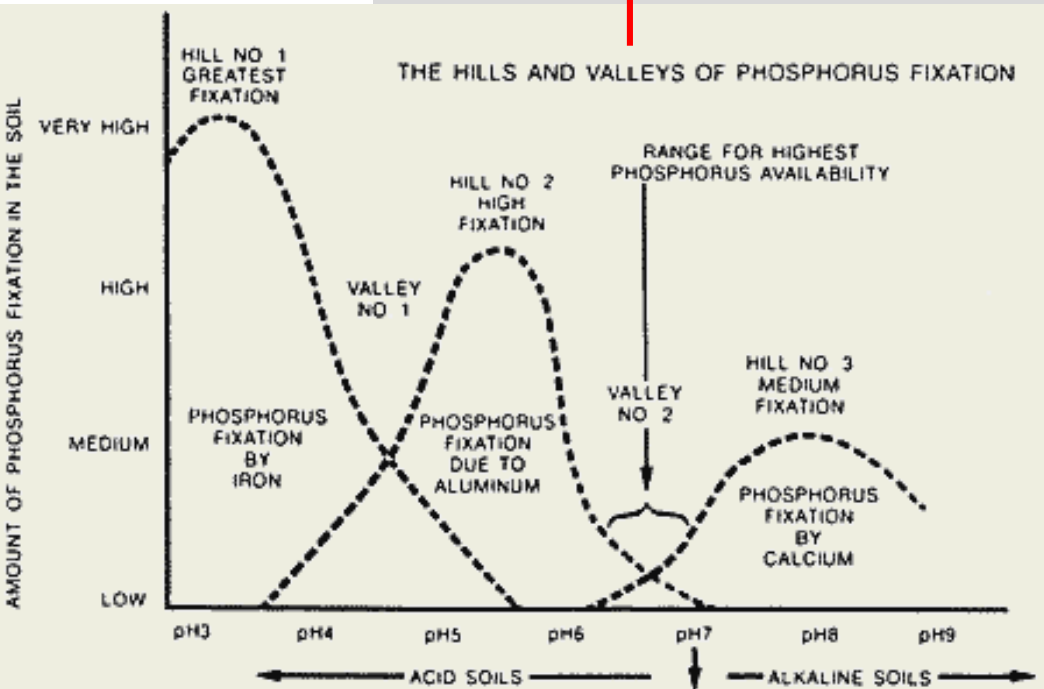


# Lime Requirement and pH on Different Soils



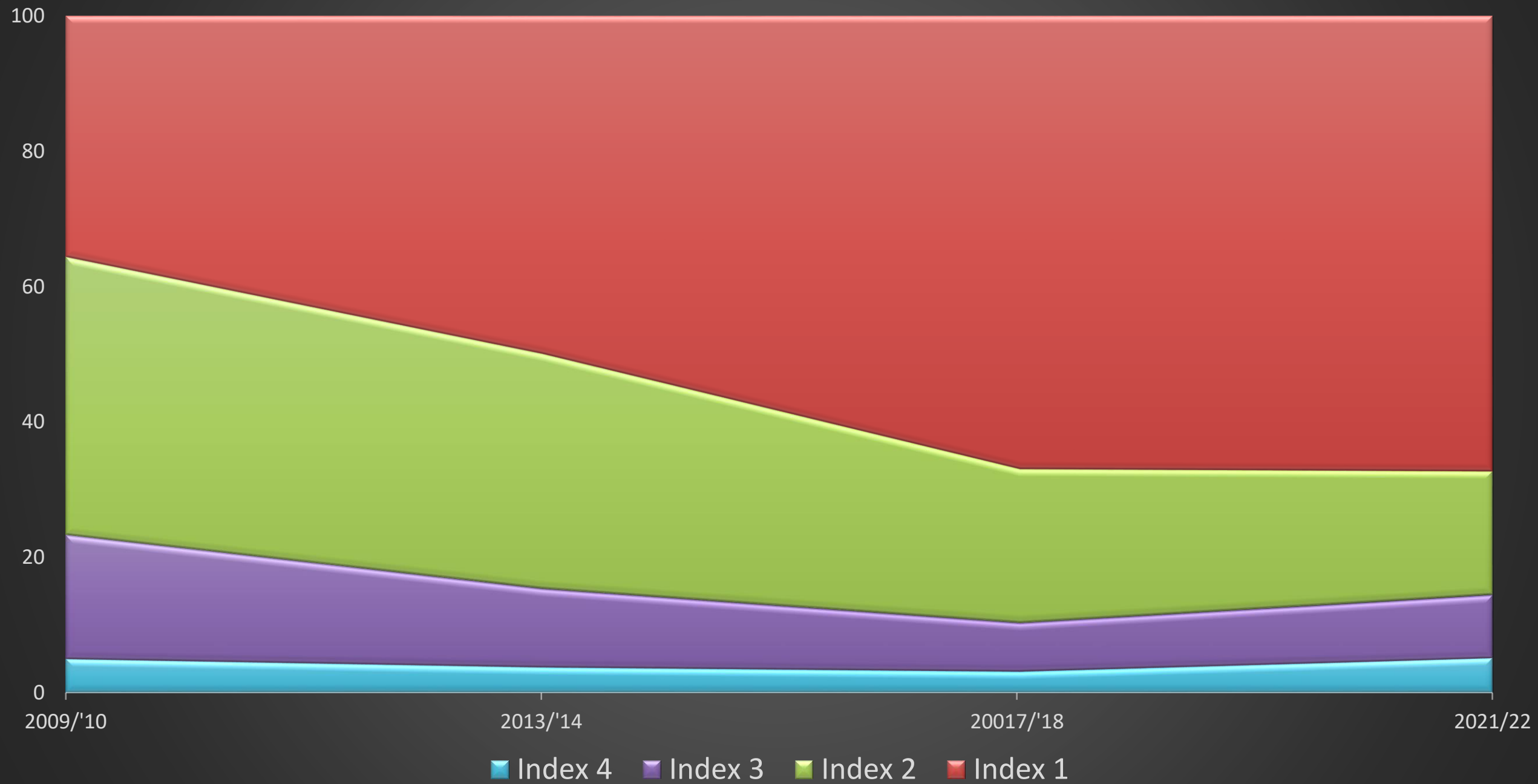
# Example of pH effect on soil P

Soil type	OM%	pH	Tot P	Tot Al	Tot Fe	Tot Ca	M-P	M3-P	M3-Al	M3-Fe	M3-Ca	WEP
	9.3	6.3	878	22368	20291	2663	4.6	37.2	639.9	325.2	1503	5.0
Ballycanew	10.2	5.6	1346	21203	24693	1726	3.5	73.9	922.7	280.8	982	2.1

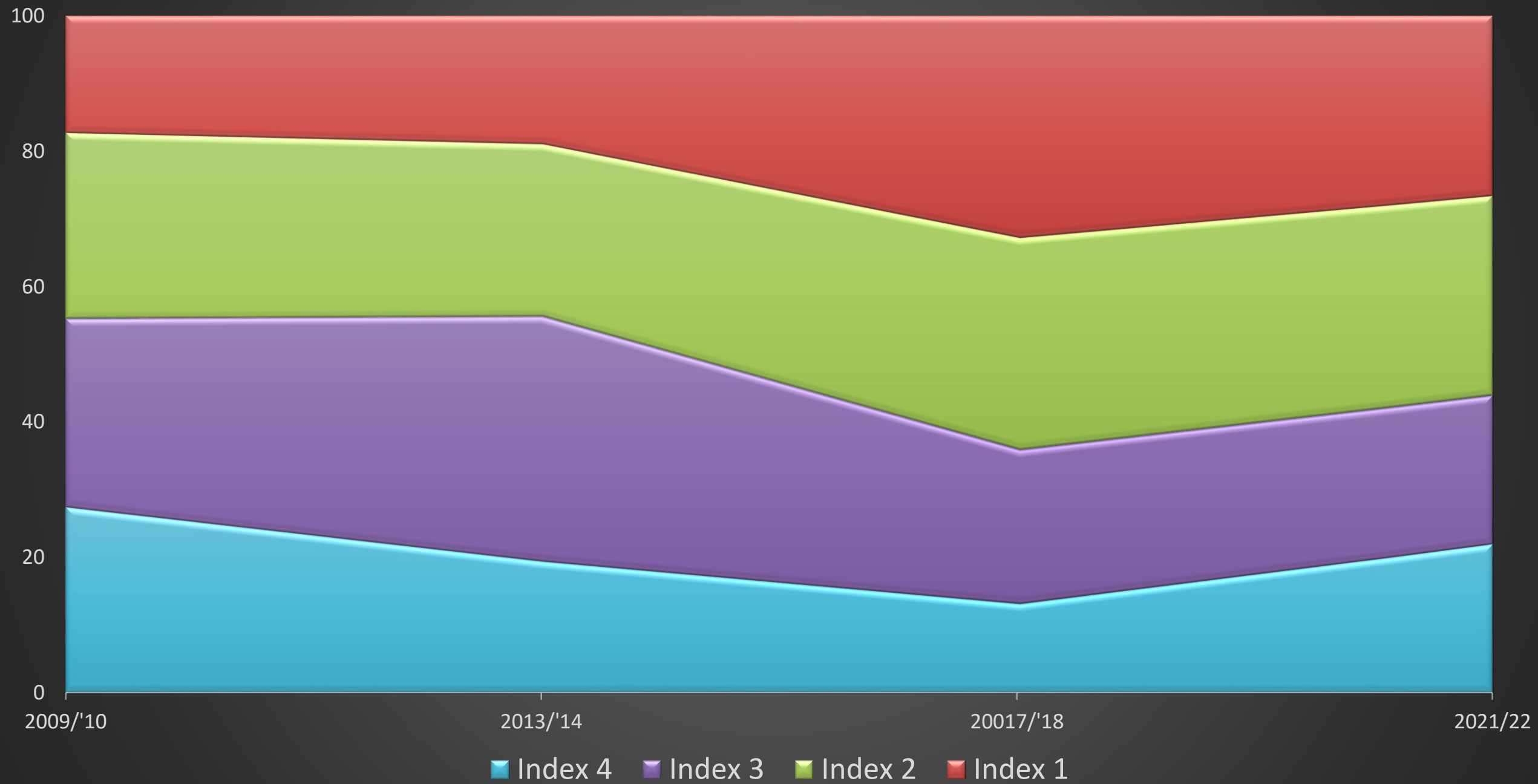


- pH below 5.8
  - High P fixation because of Al under aqueous form (really available)
  - P more likely to be locked-up by the soil
  - Morgan-P is low
- Large amount of P in the soil,  
but not available for the plant

# P Index: Ballycanew

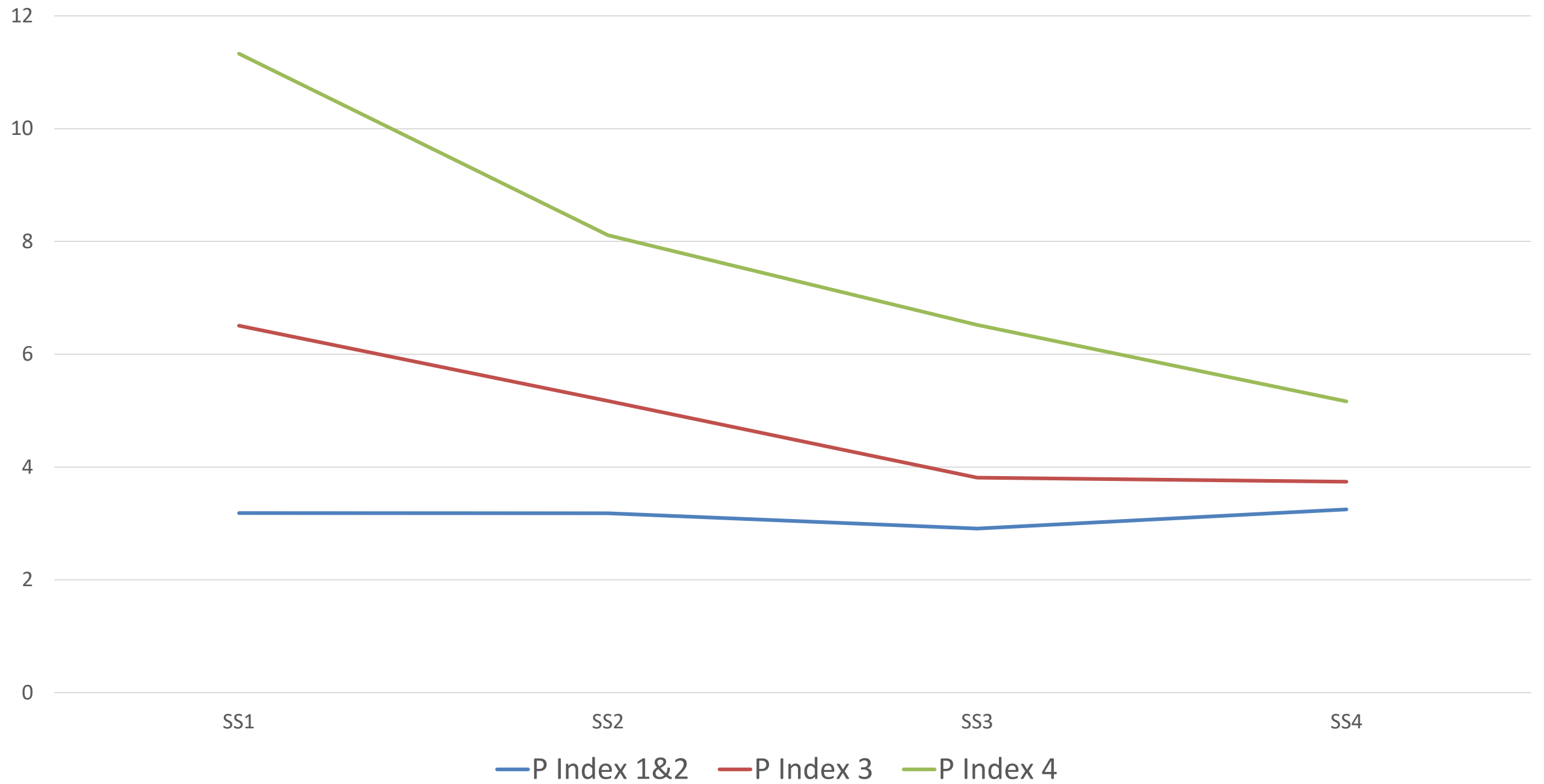


# P Index: Timoleague

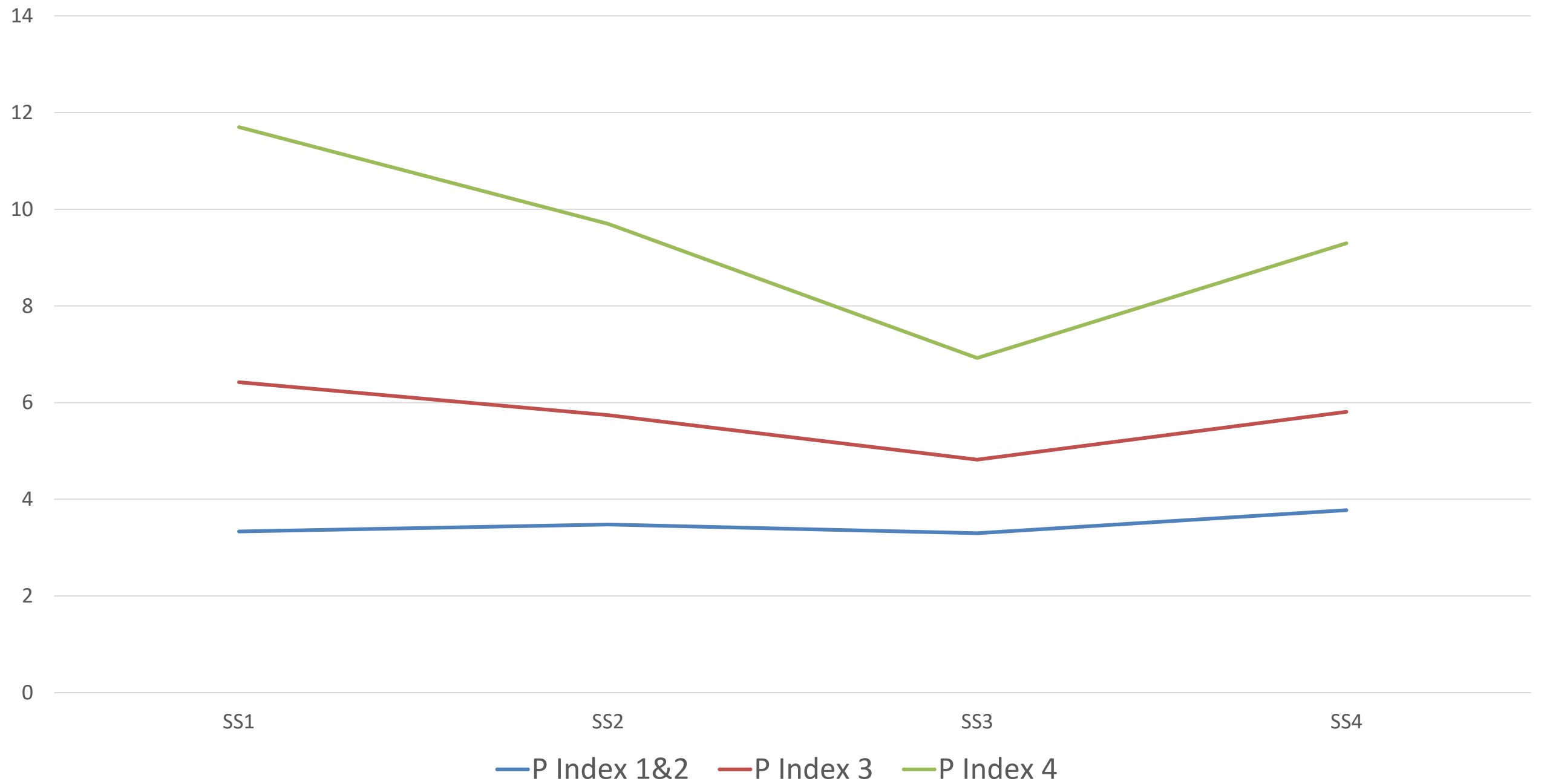




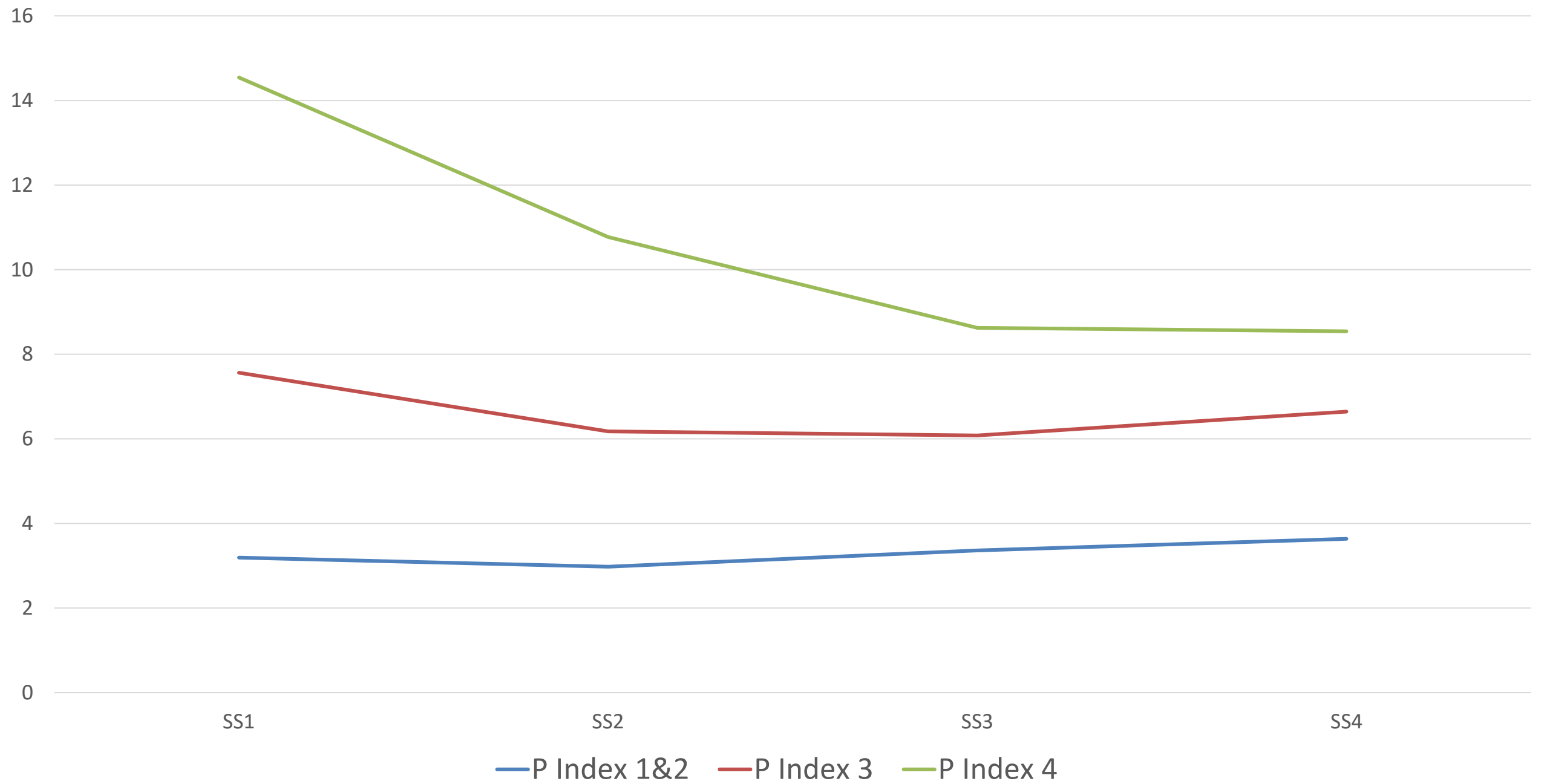
# P Morgan (ppm) Trends - Drystock



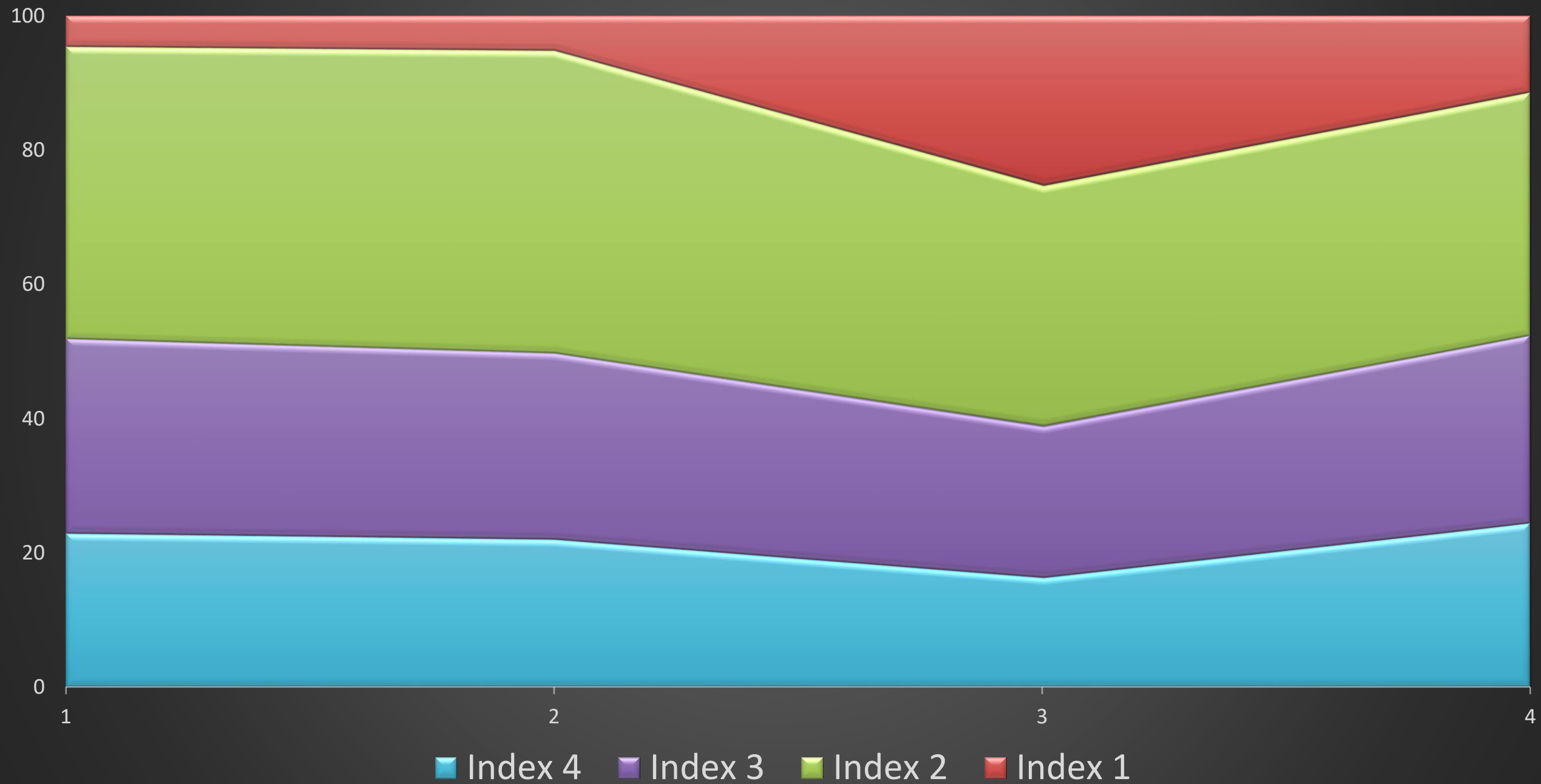
# P Morgan (ppm) Trends - Dairy



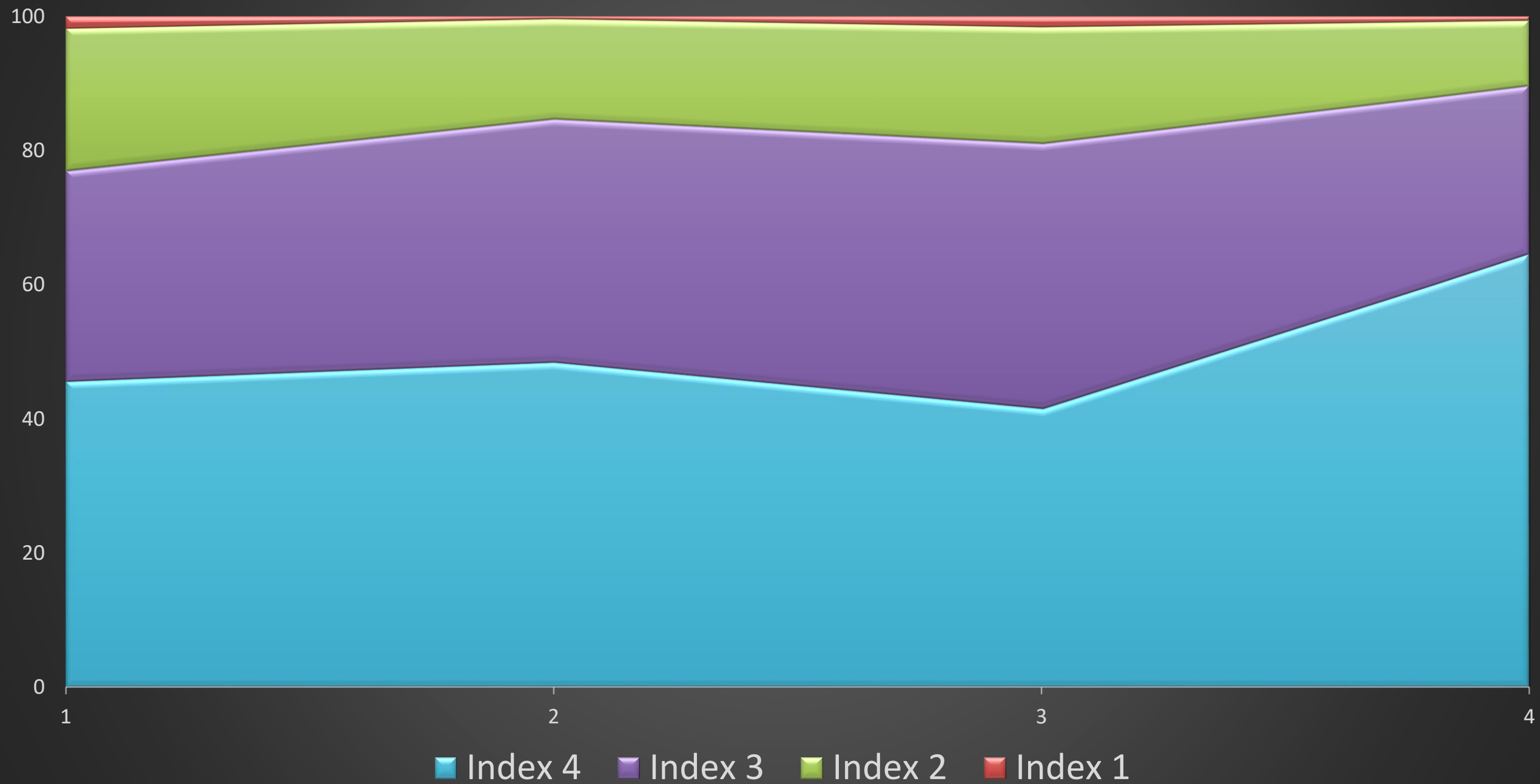
# P Morgan (ppm) Trends - Tillage



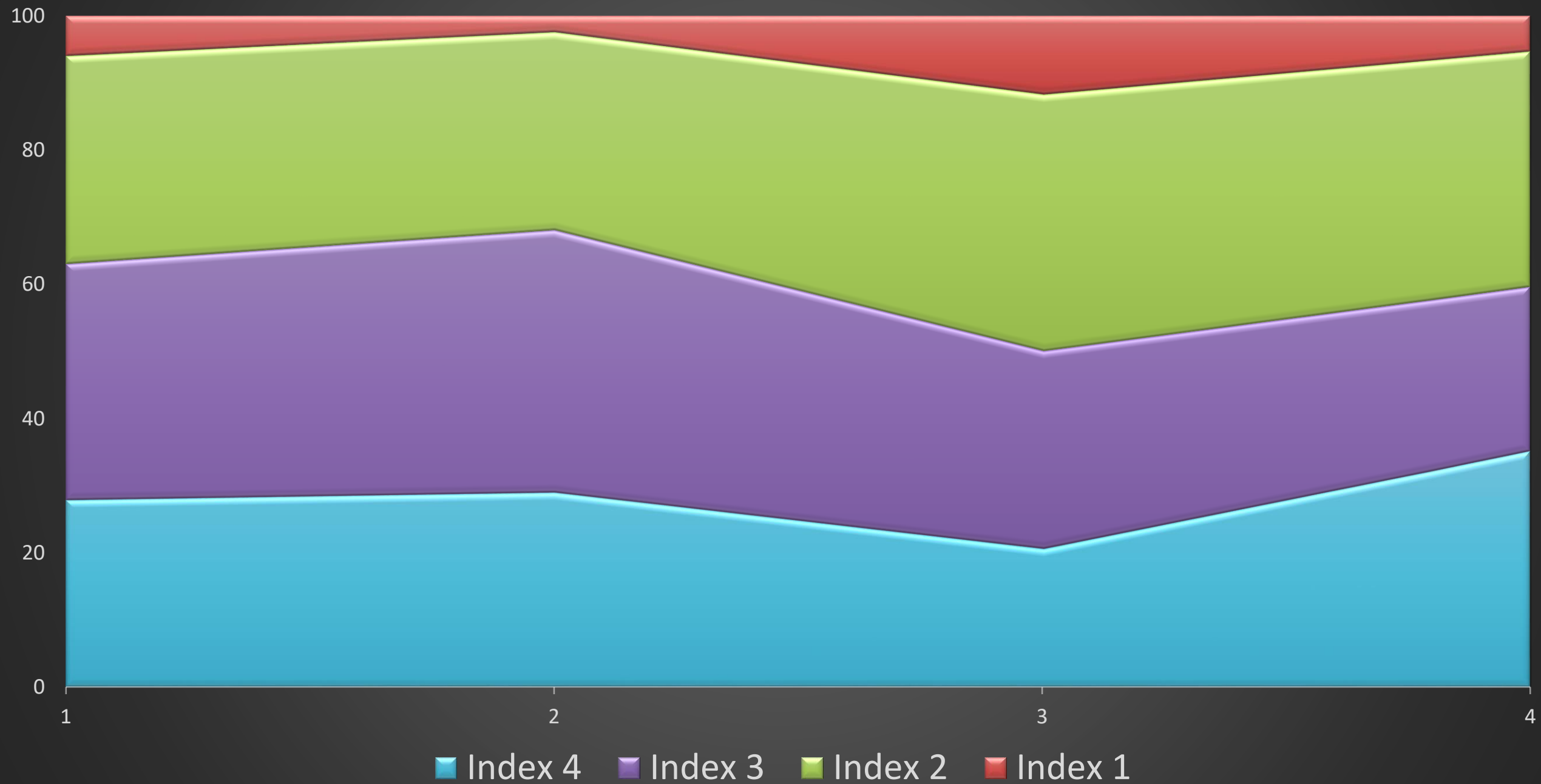
# K Index: Ballycanew



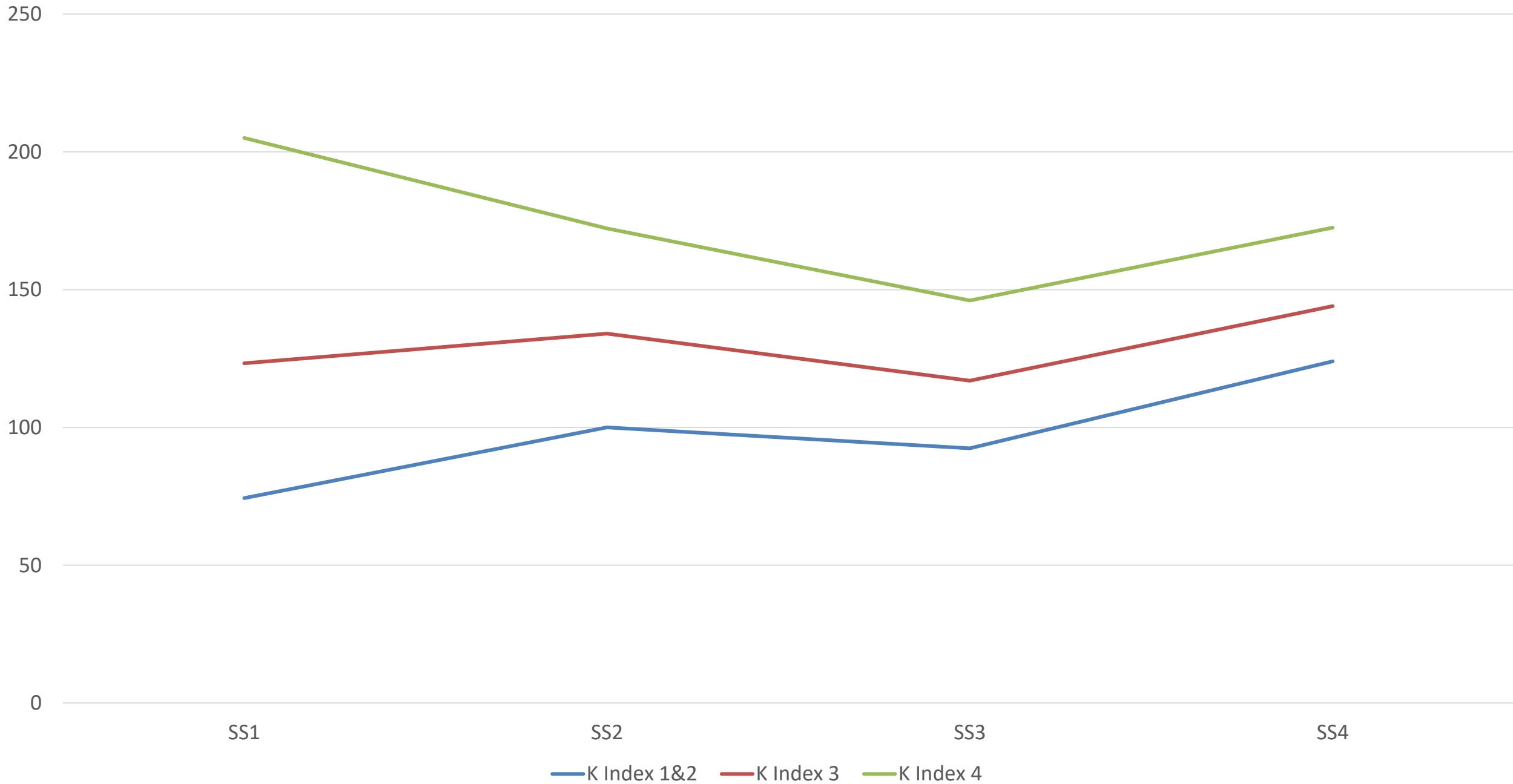
# K Index: Castledockrell



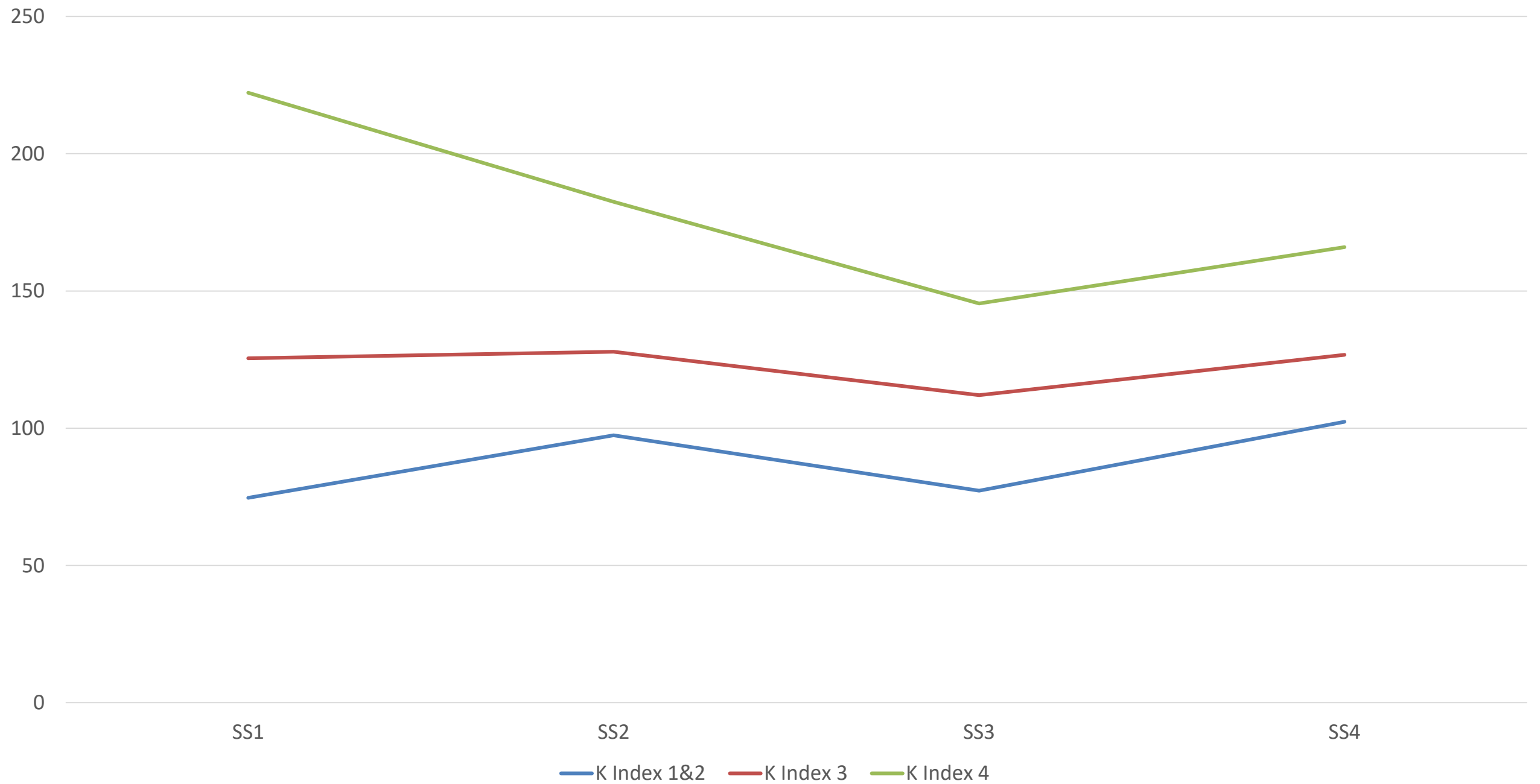
# K Index: Timoleague



# K Morgan (ppm) Trends – All Catchments

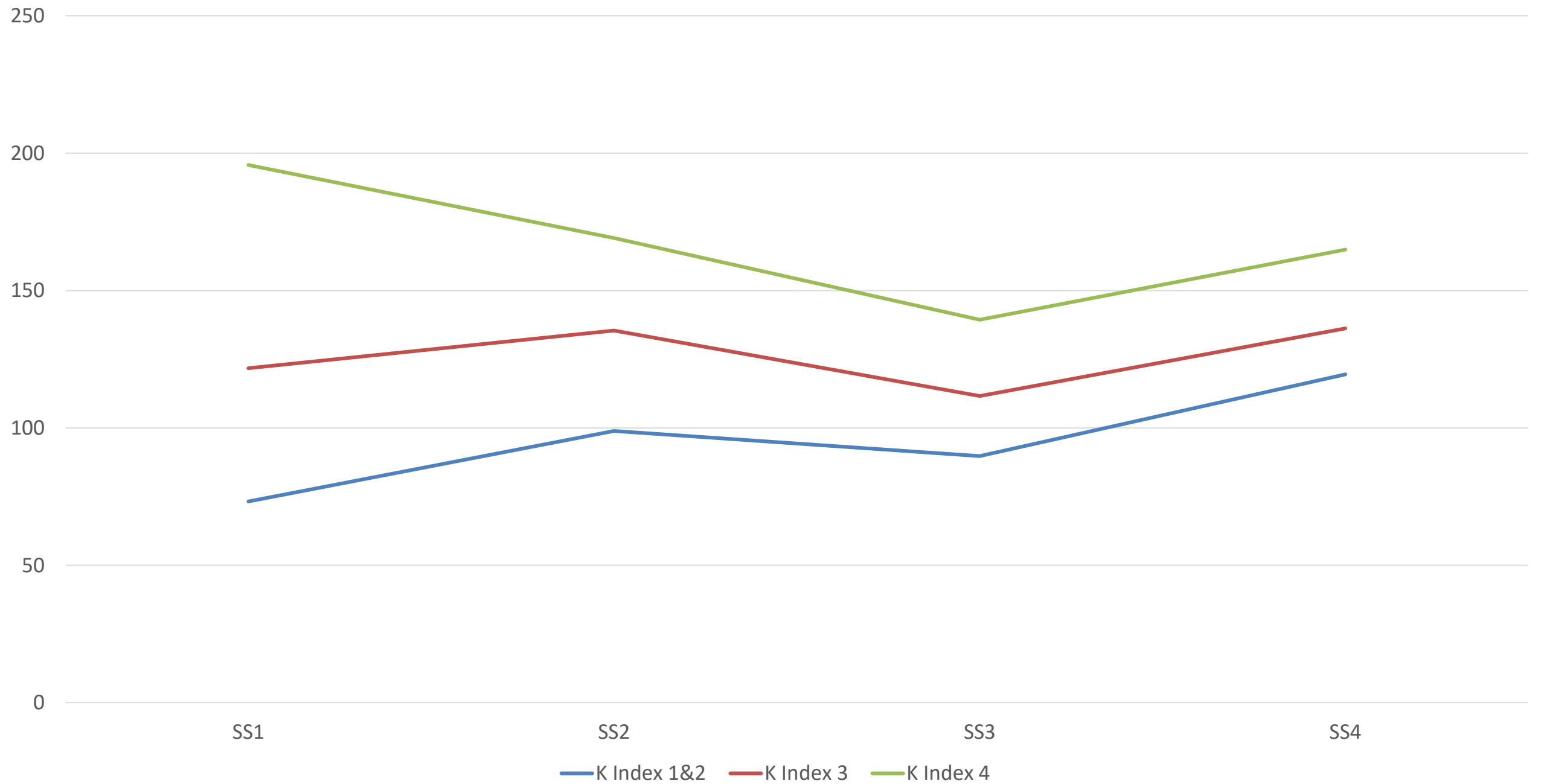


# K Morgan (ppm) Trends - Drystock

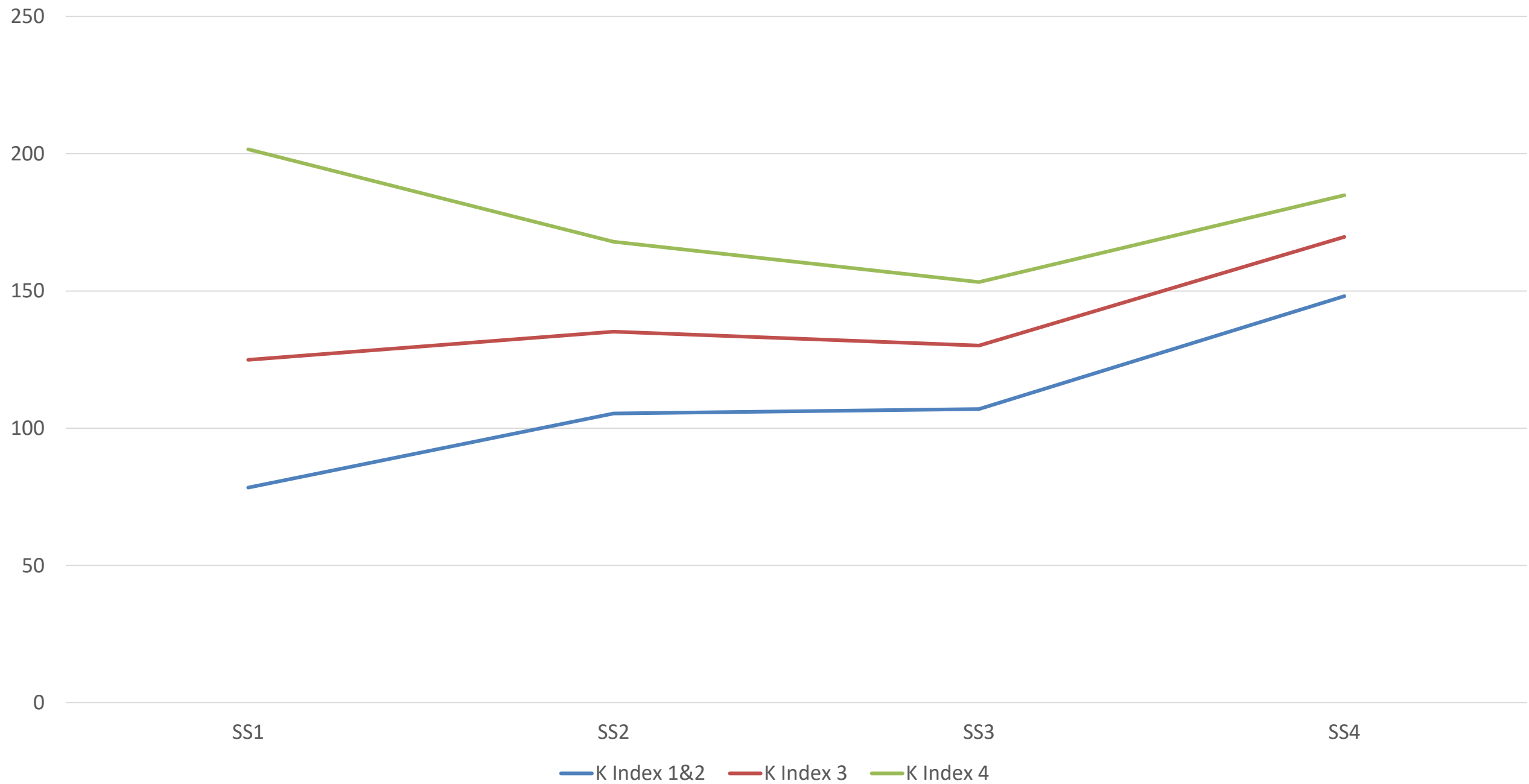




# K Morgan (ppm) Trends - Dairy

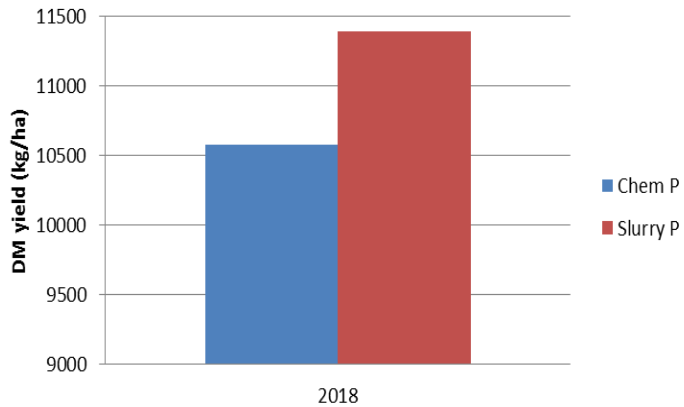


# K Morgan (ppm) Trends - Tillage

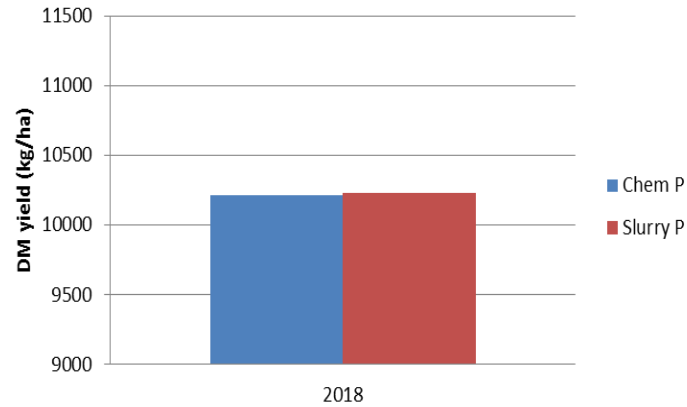


# P response Cattle Slurry vs. Chemical

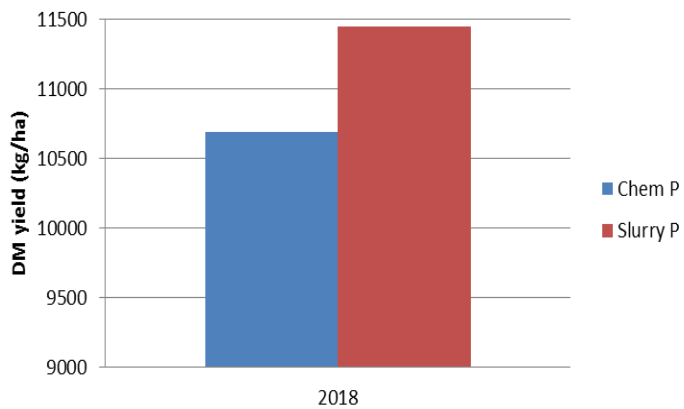
## Ballycanew



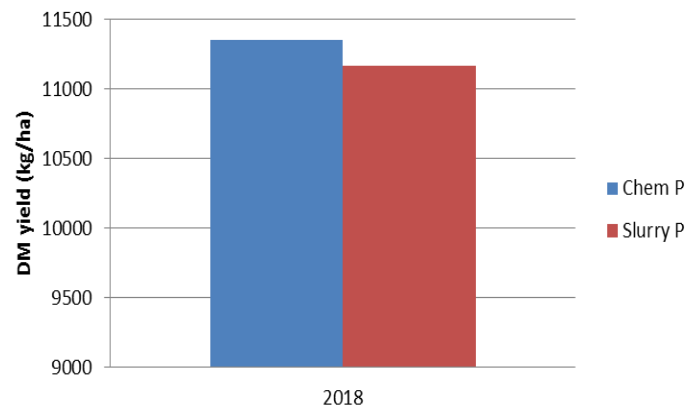
## Cregduff



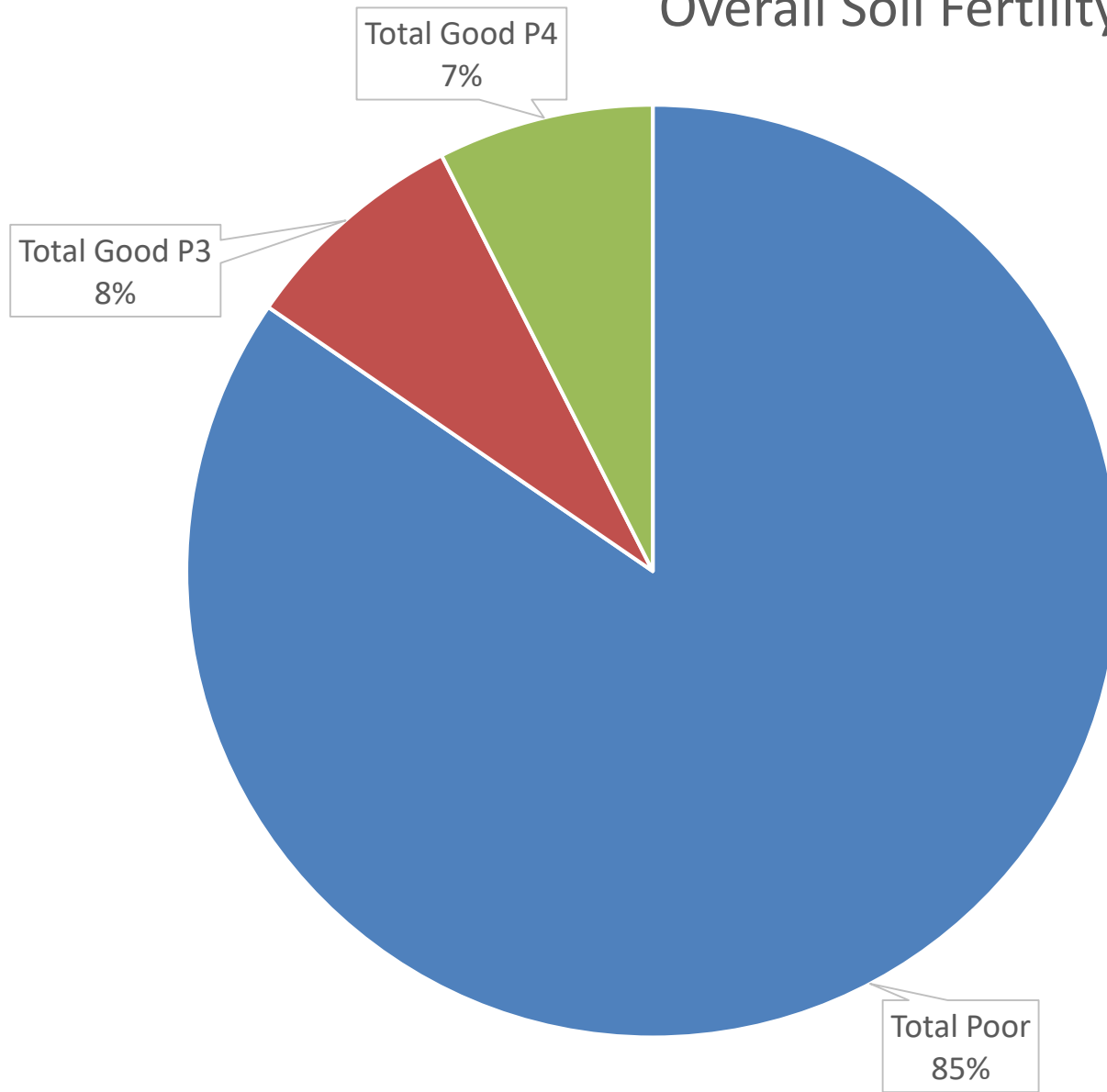
## Dunleer



## Timoleague

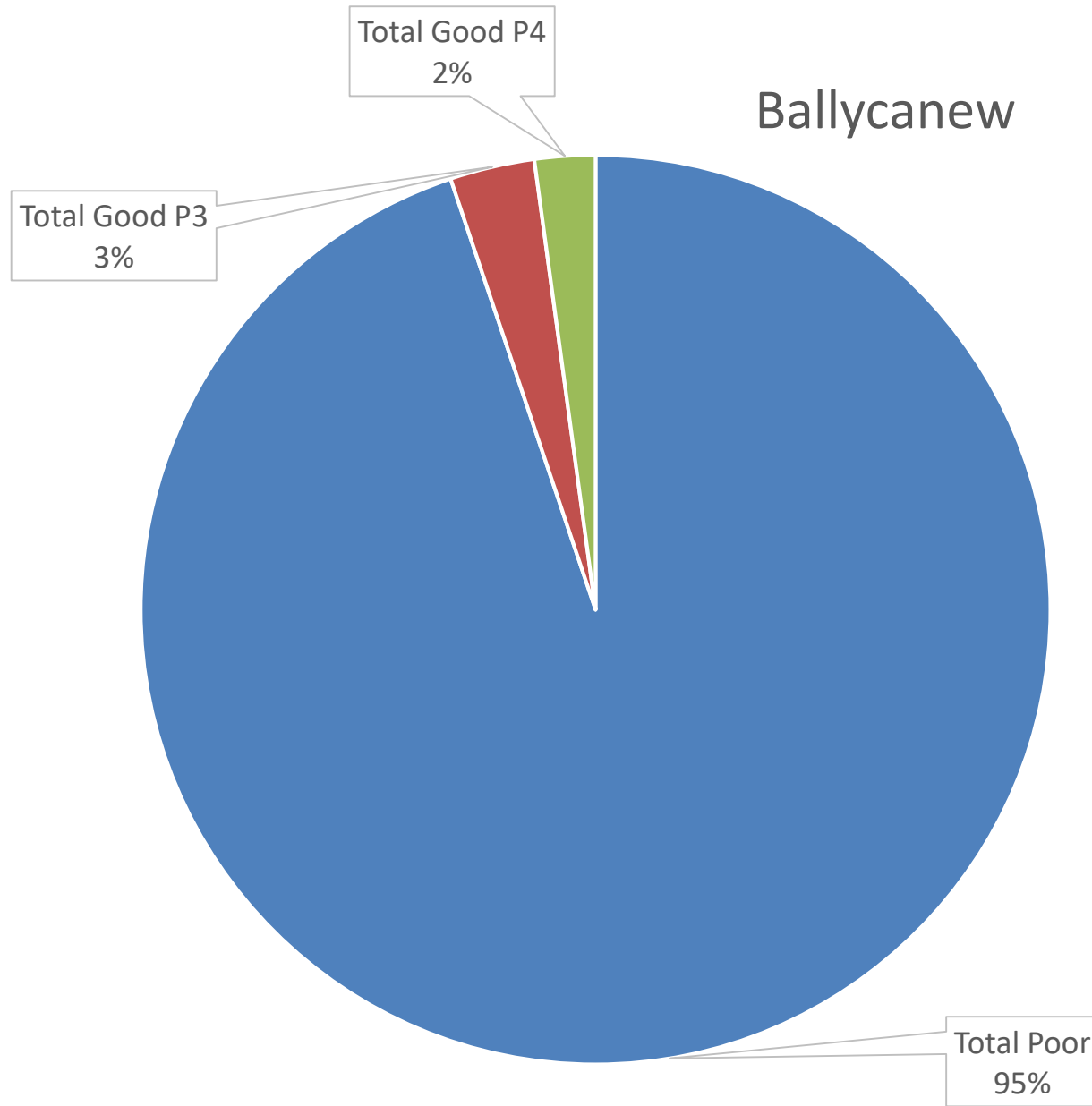


# Overall Soil Fertility – All Catchments



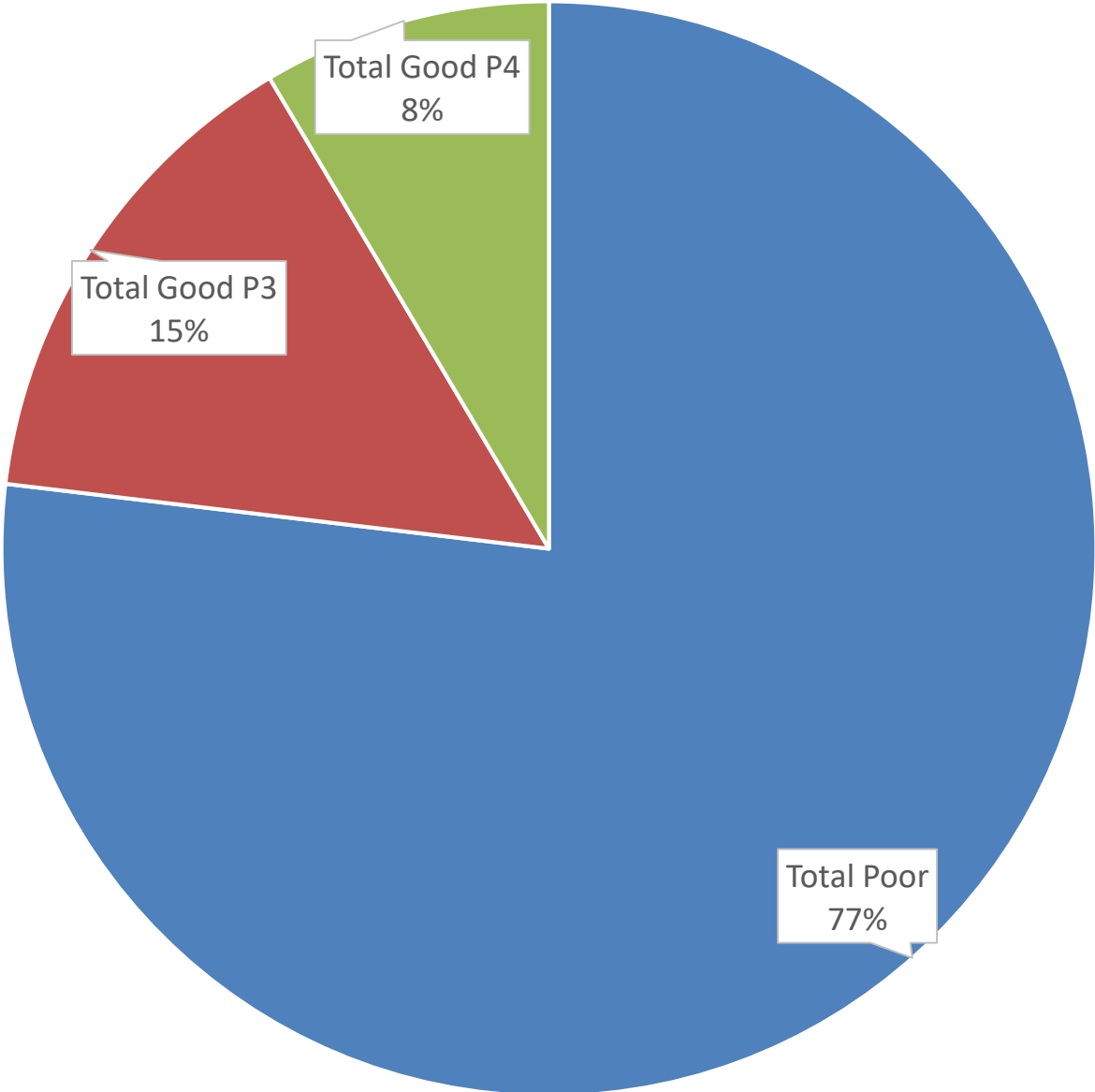
■ Total Poor   ■ Total Good P3   ■ Total Good P4

# Ballycanew



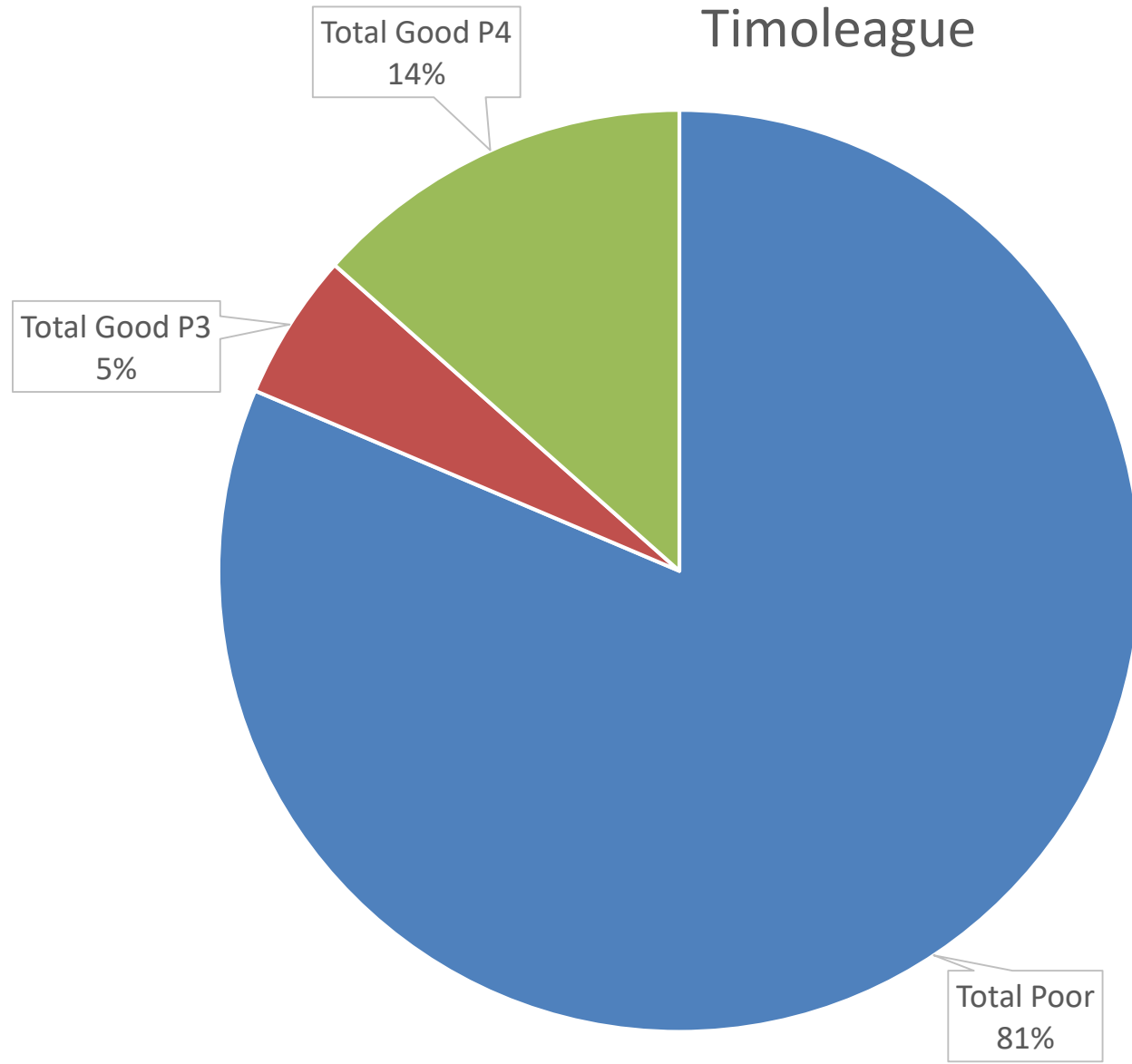
■ Total Poor   ■ Total Good P3   ■ Total Good P4

Castledockrell



■ Total Poor   ■ Total Good P3   ■ Total Good P4

# Timoleague



■ Total Poor   ■ Total Good P3   ■ Total Good P4

# Fertiliser Prices

<b>Fertiliser product</b>	<b>2021</b>	<b>2021 August*</b>	<b>2021 October**</b>
CAN (27% N)	€235	€435	€650
Urea (46% N)	€370	€630	€840
0-10-20	€365	€465	€600
10-10-20	€365	€580	€790
13-6-20	€355	€565	€760
18-6-12	€340	€550	€750
24-2.5-10	€350	€540	€750
<i>* Mark Plunket September</i>		<i>**ca. Based on current trading prices</i>	

Prices had increase up to €200/tonne!!  
Now they have done it again!!!



# Policy Implications

- Farm 2 Fork
  - 20% reduction in fertiliser use
  - 50% reduction in nutrient loss
- Water Quality trends and WFD targets
- GHG commitments
- Ammonia emissions from agriculture

