

Soil Fertility Trends in the ACP

Edward Burgess & Simon Leach

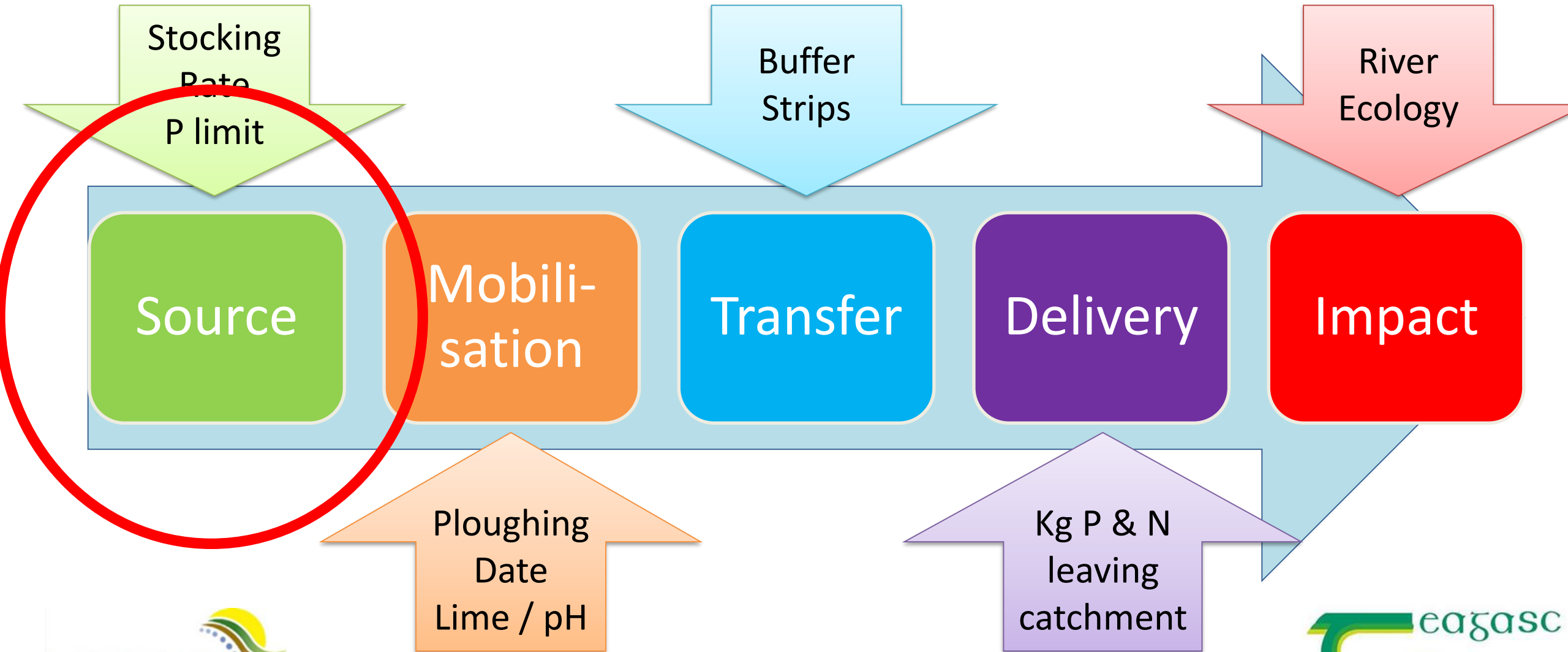
Teagasc's Agricultural Catchments Programme



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
Kerry
Grassland

Timoleague
Well Drained Soils
Grassland

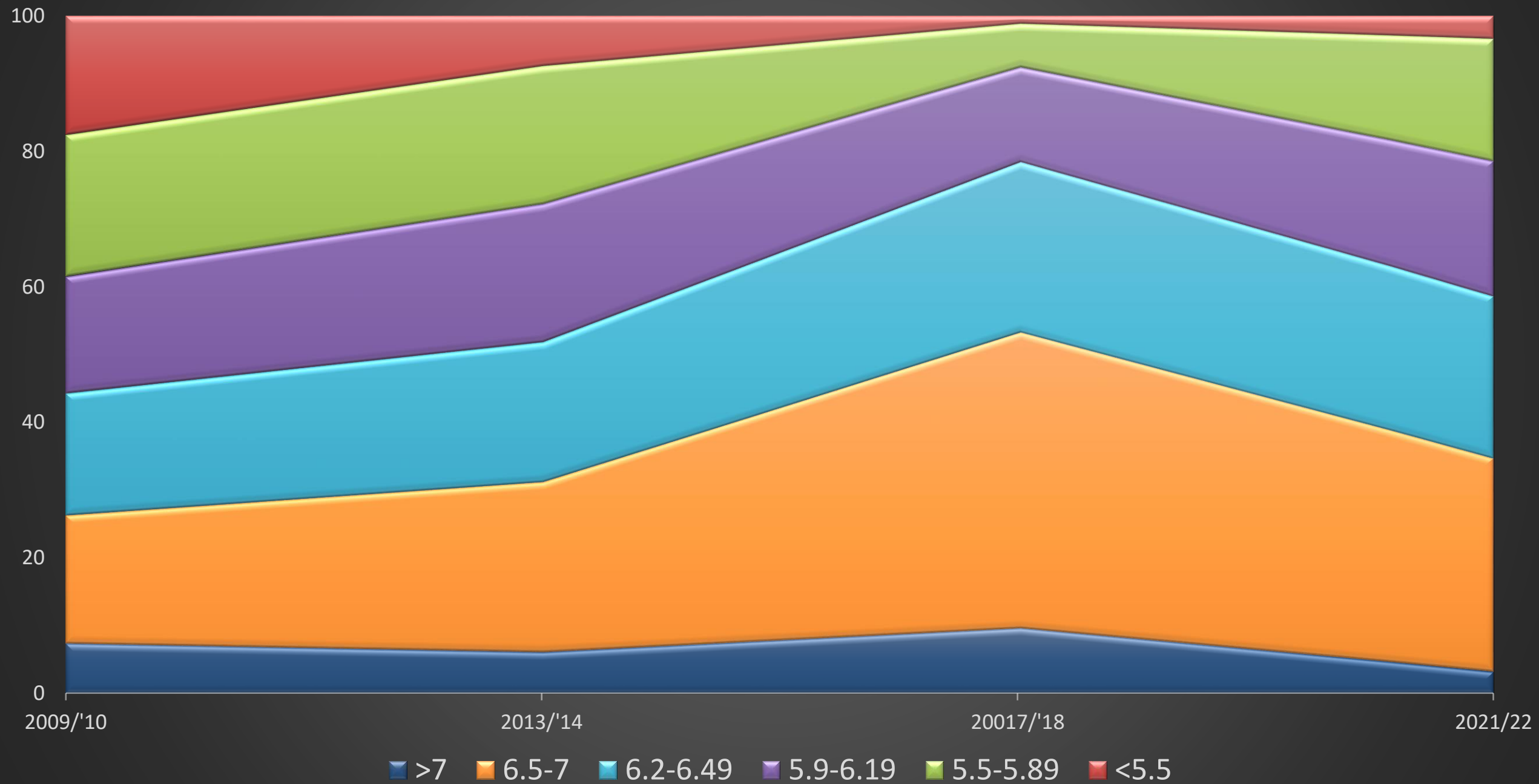
Corduff-Sreenty
Poorly Drained Soils
Grassland

Dunleer
Poorly Drained Soils
Tillage / Grassland

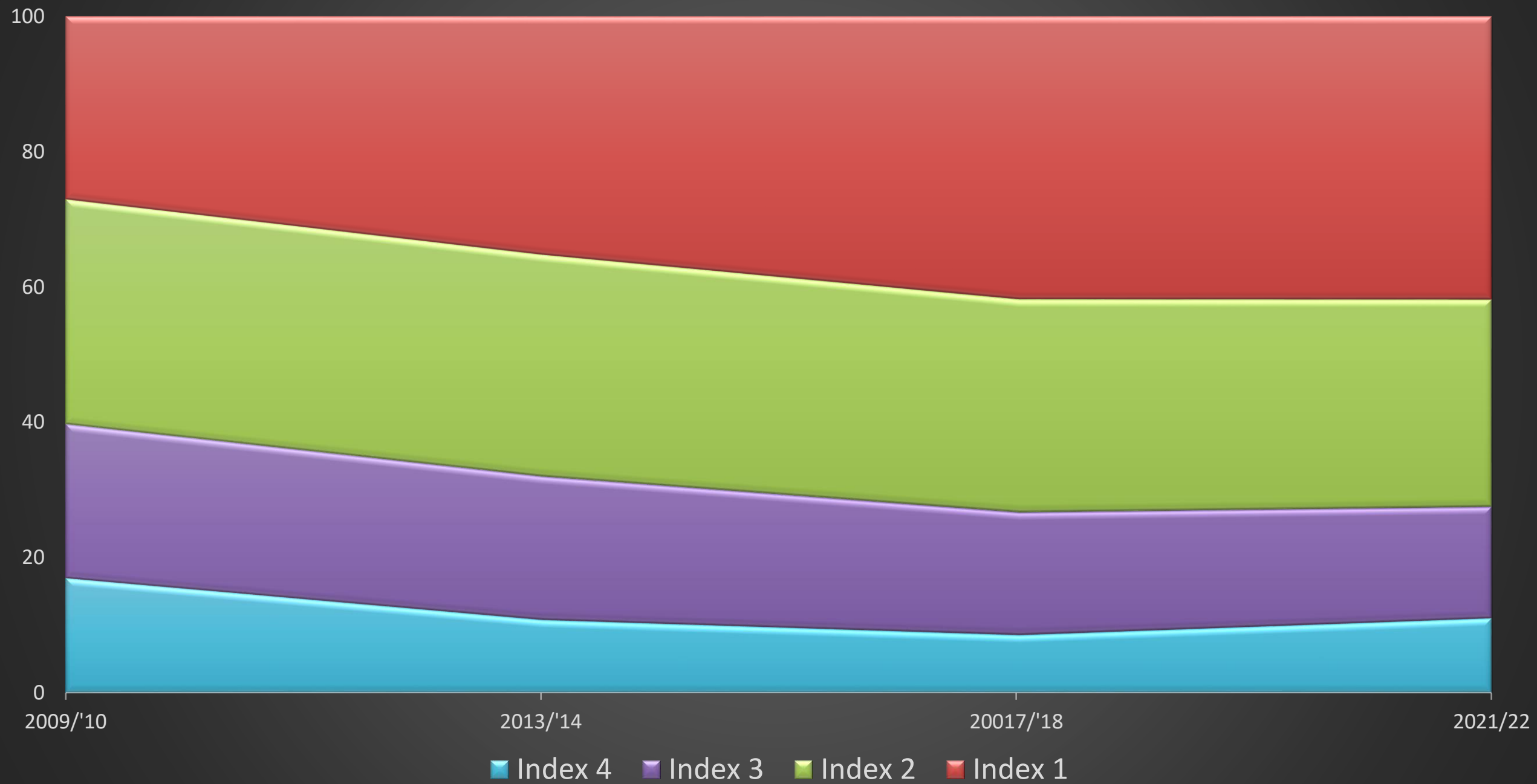
Ballycanew
Poorly Drained Soils
Grassland / Tillage

Castledockrell
Well Drained Soils
Tillage / Grassland

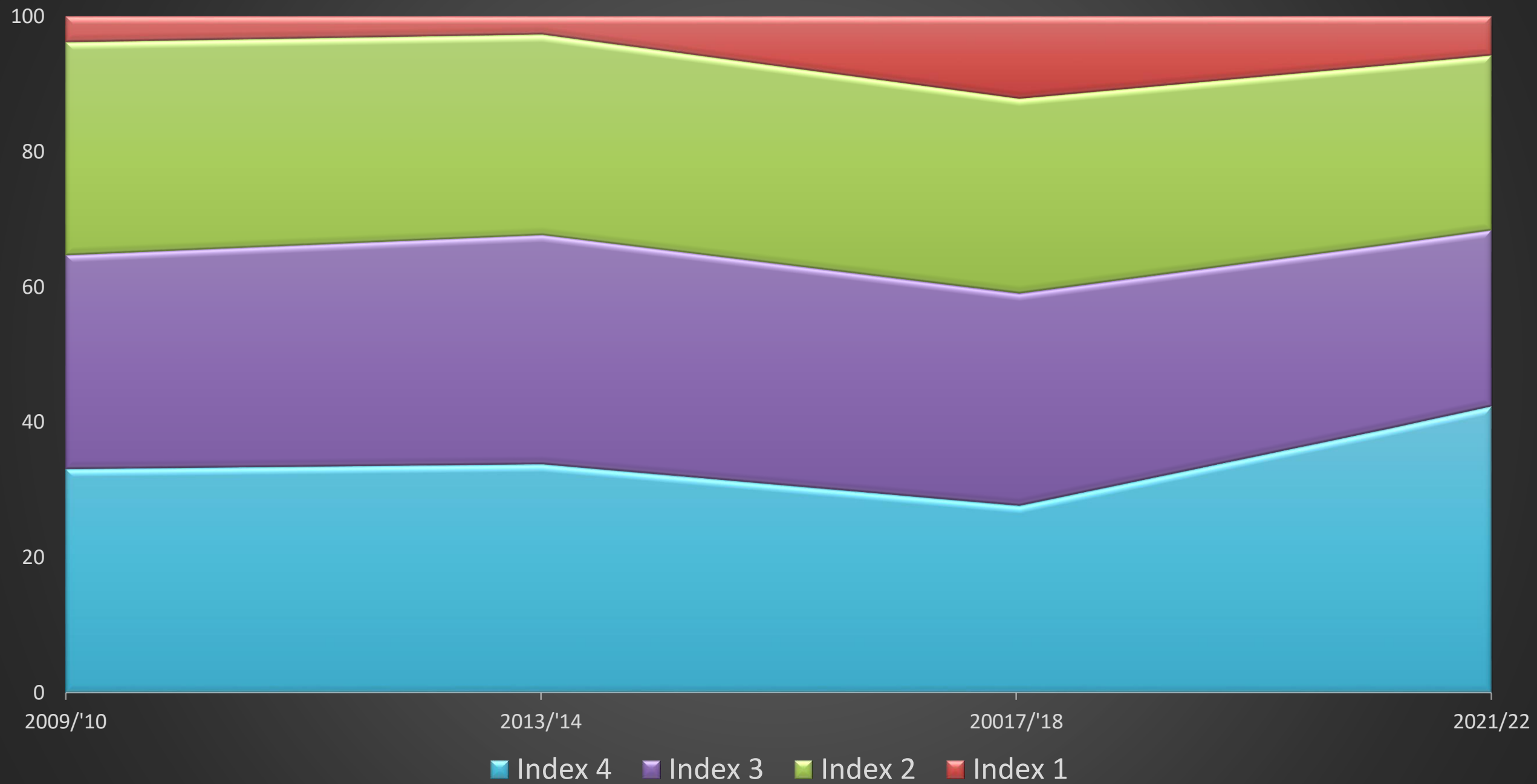
pH: All Catchment



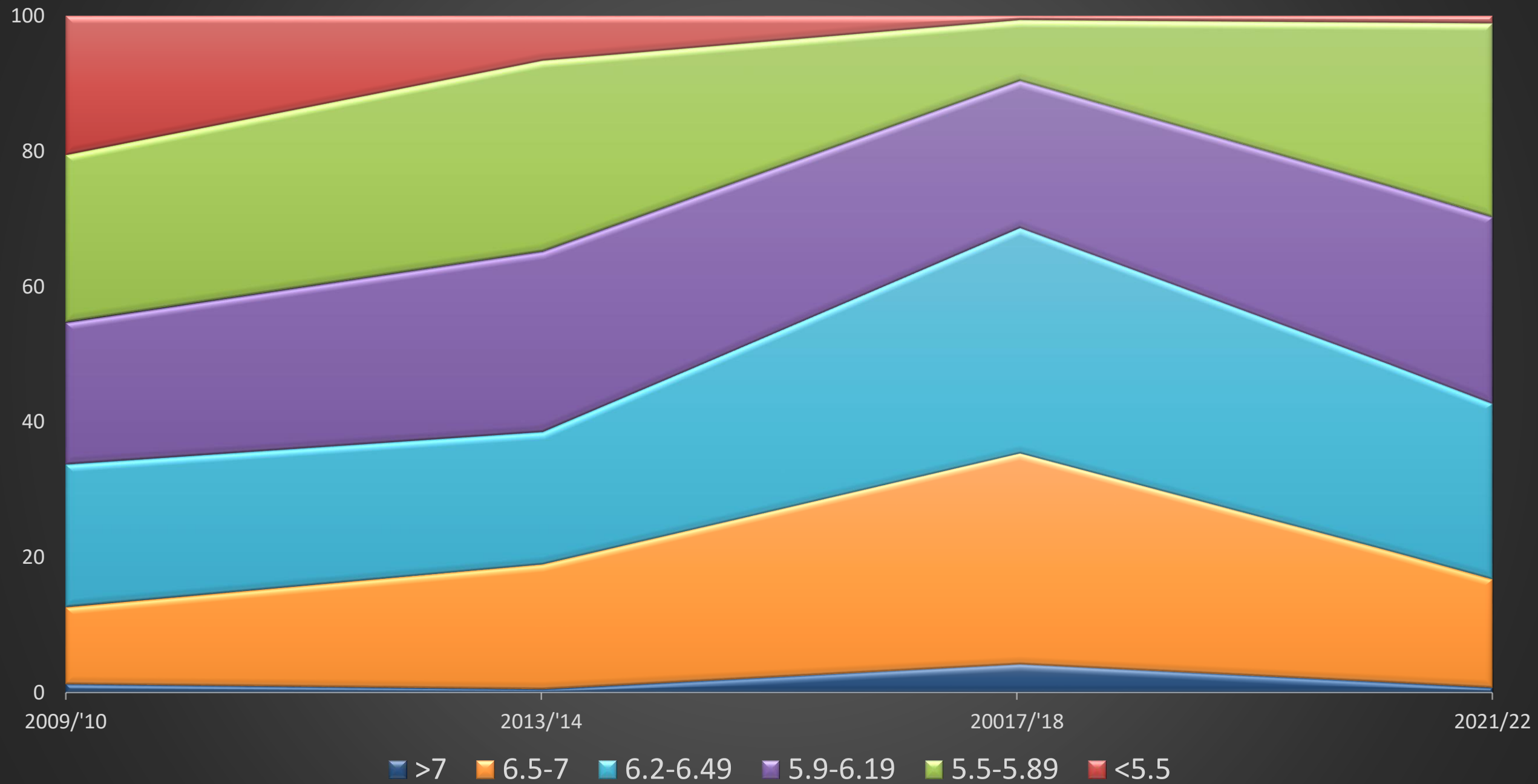
P Index: All Catchment



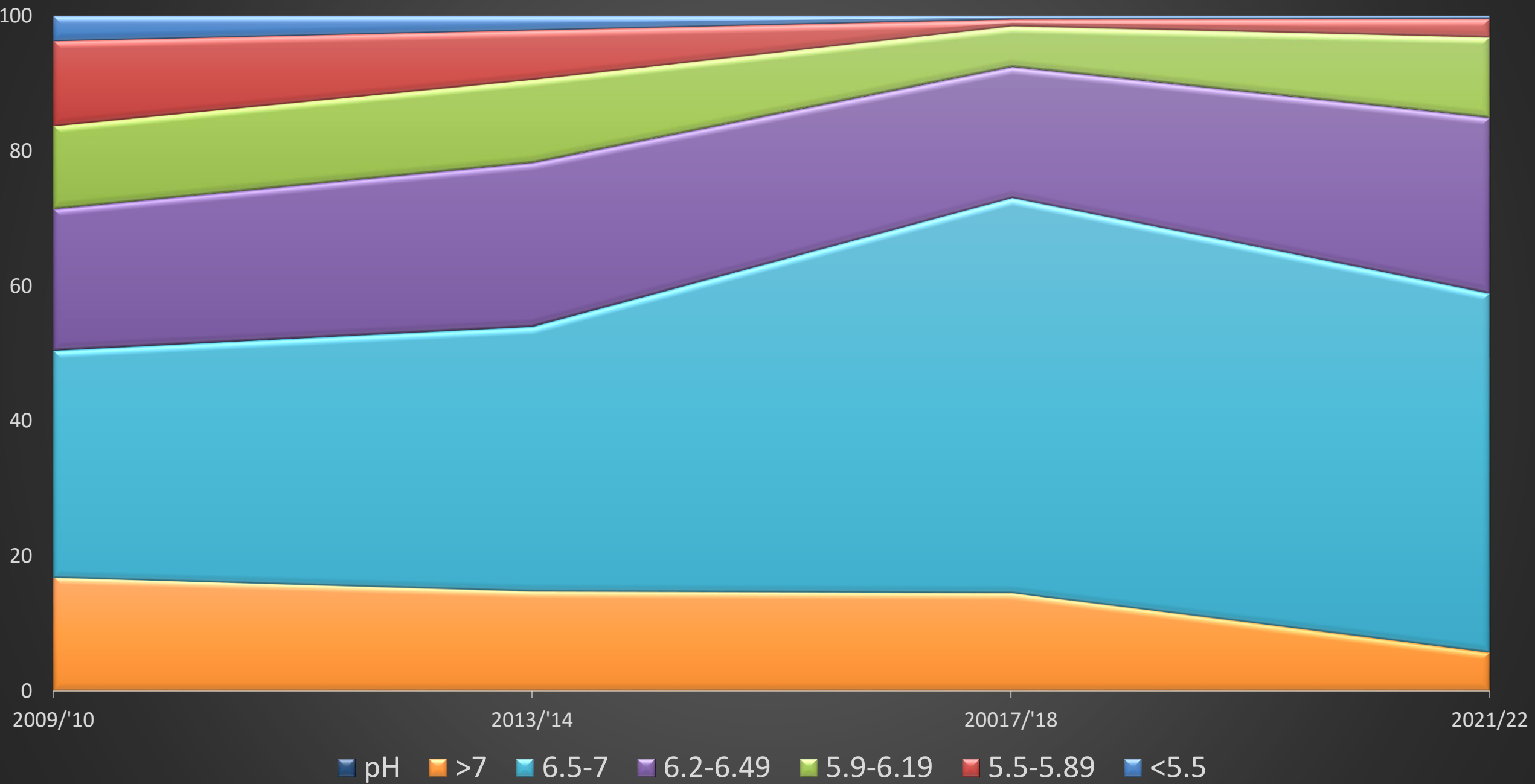
K Index: All Catchment



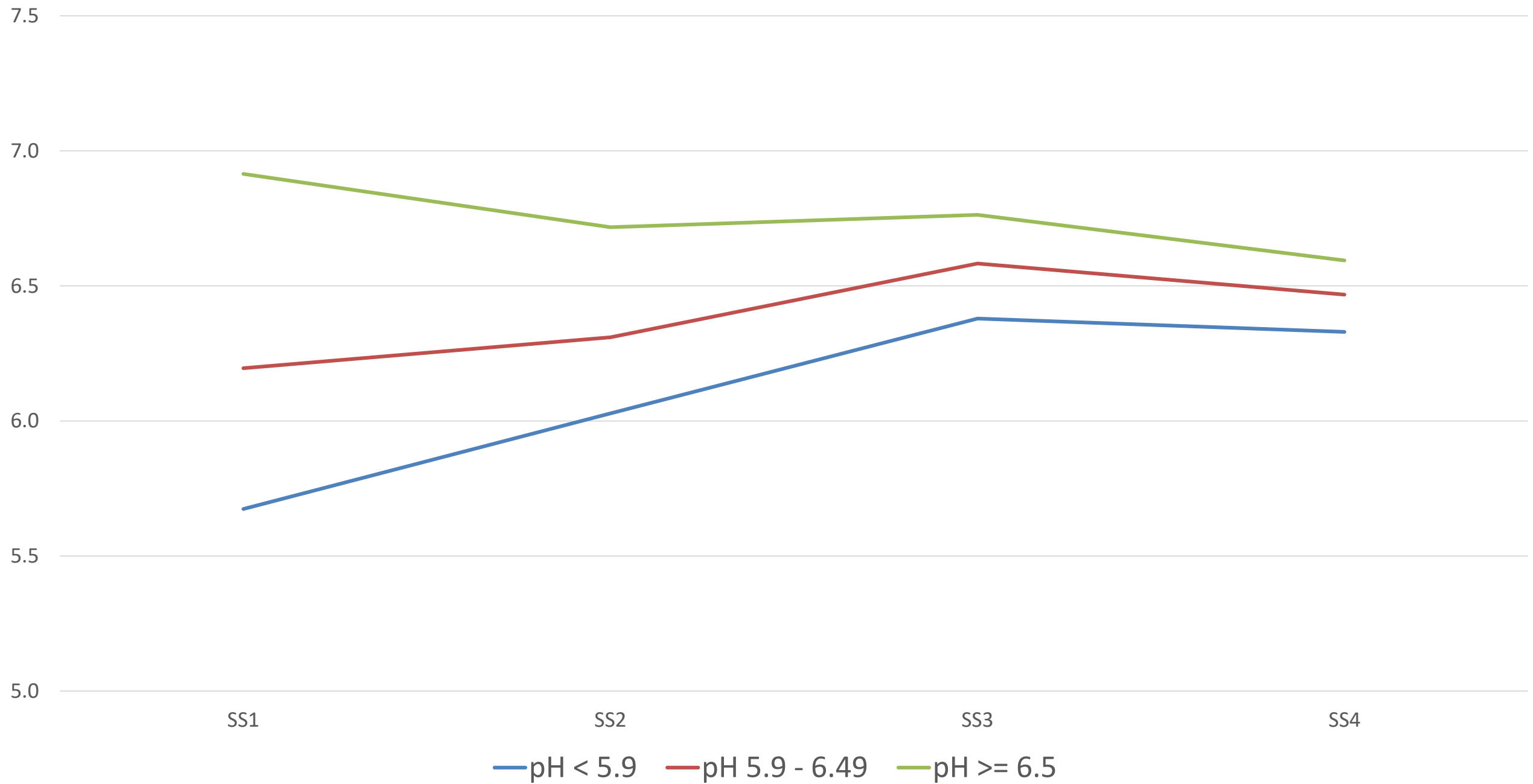
pH: Ballycanew



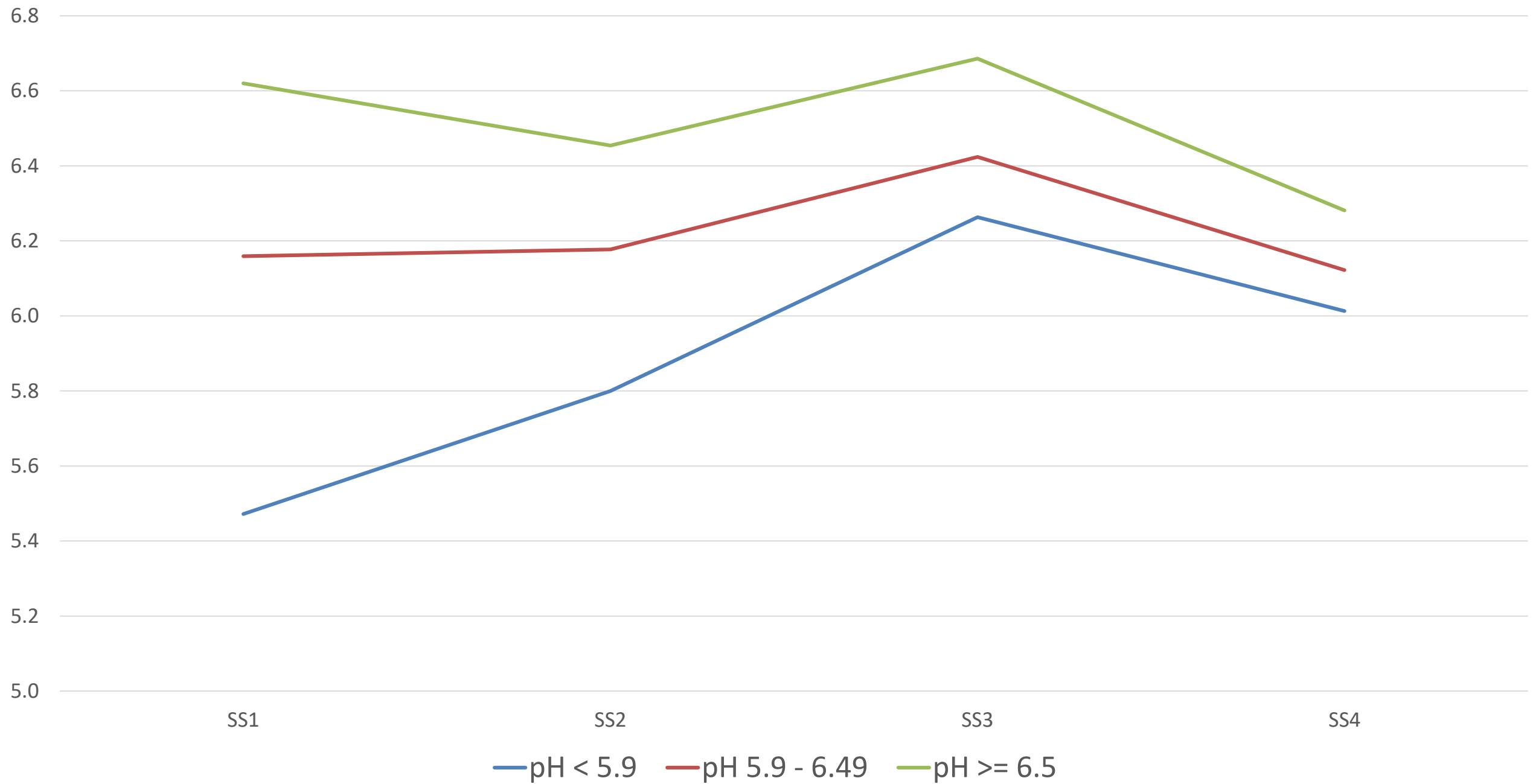
pH: Castledockrell



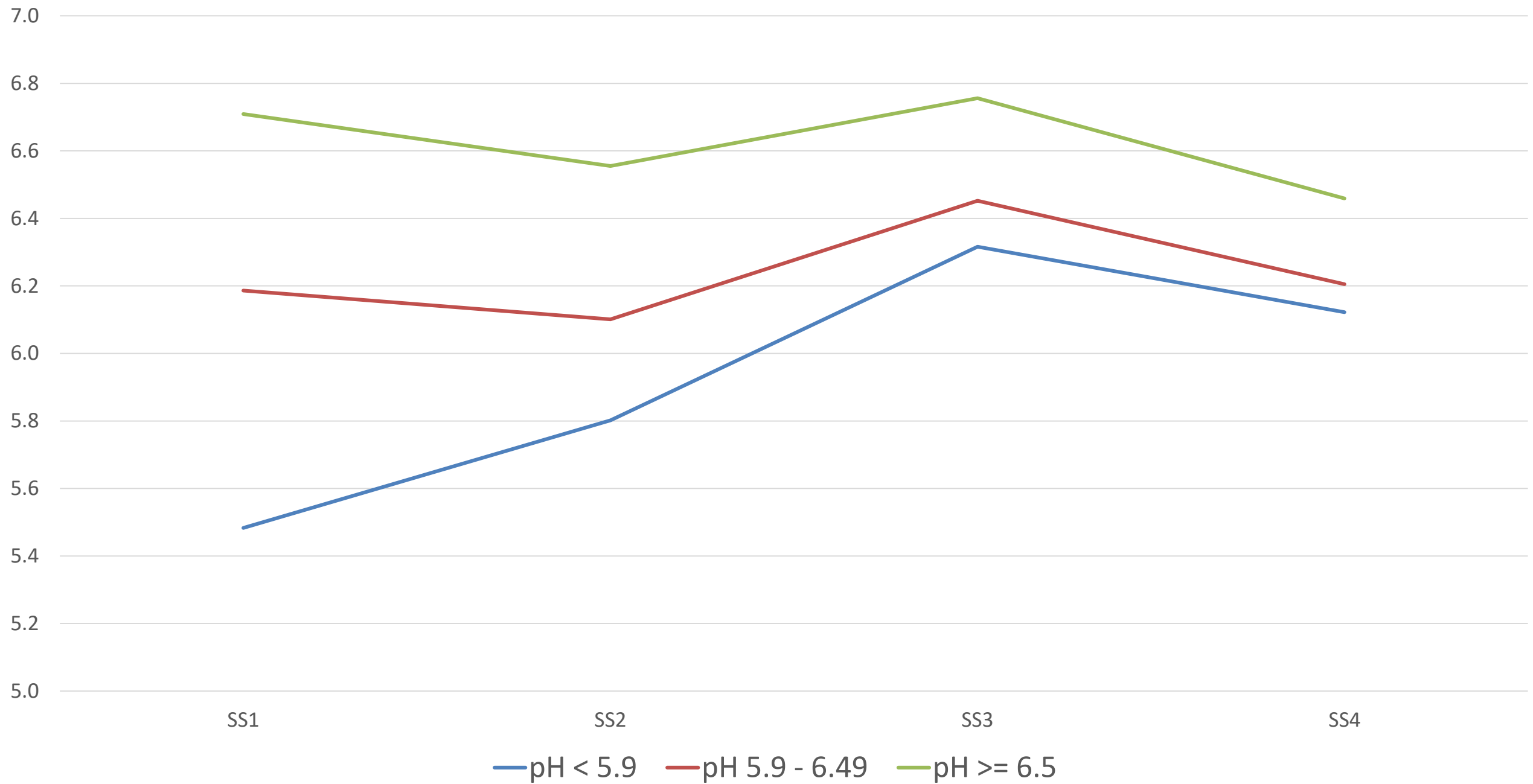
pH Trends - Tillage



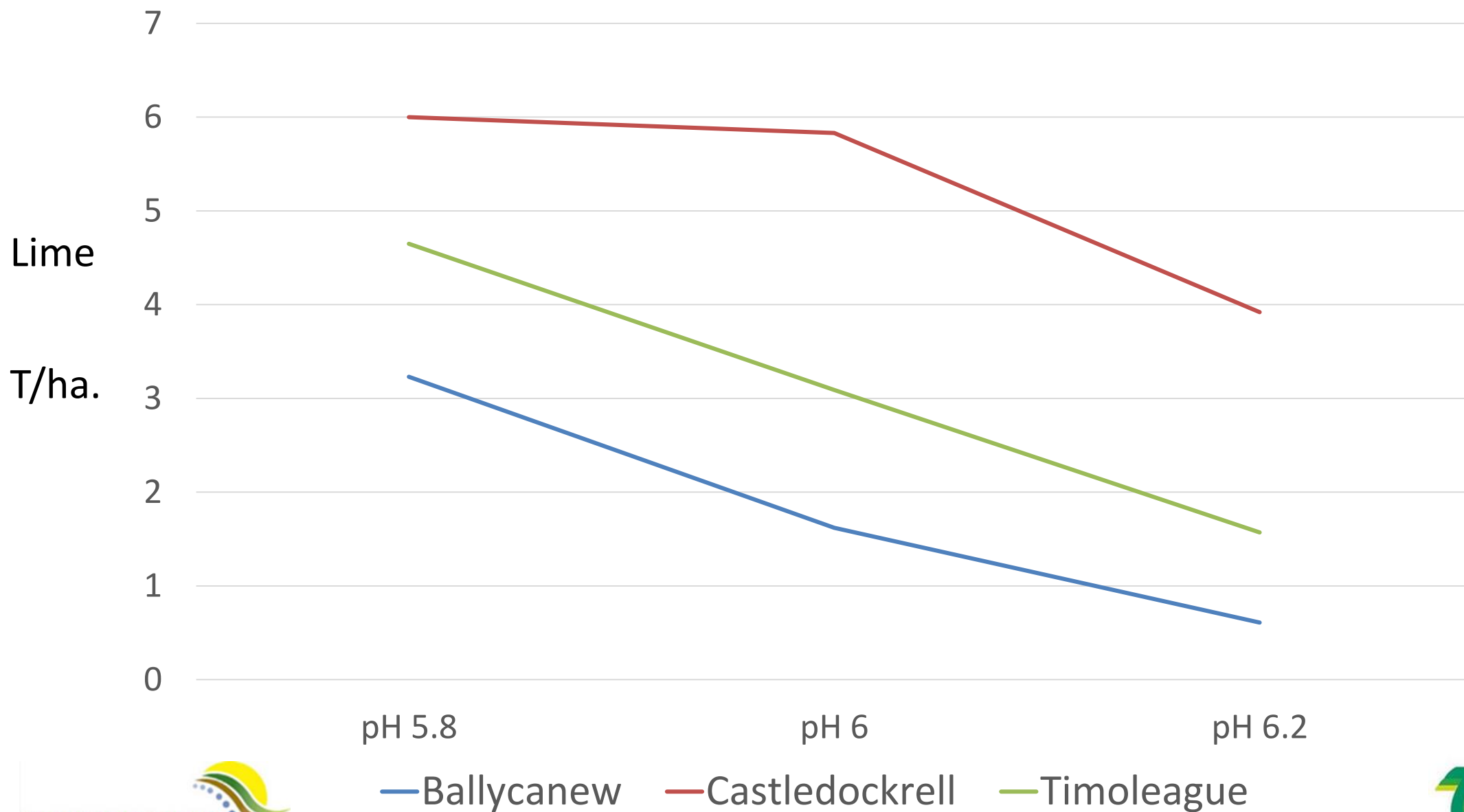
pH Trends - Dairy



pH Trends - Drystock

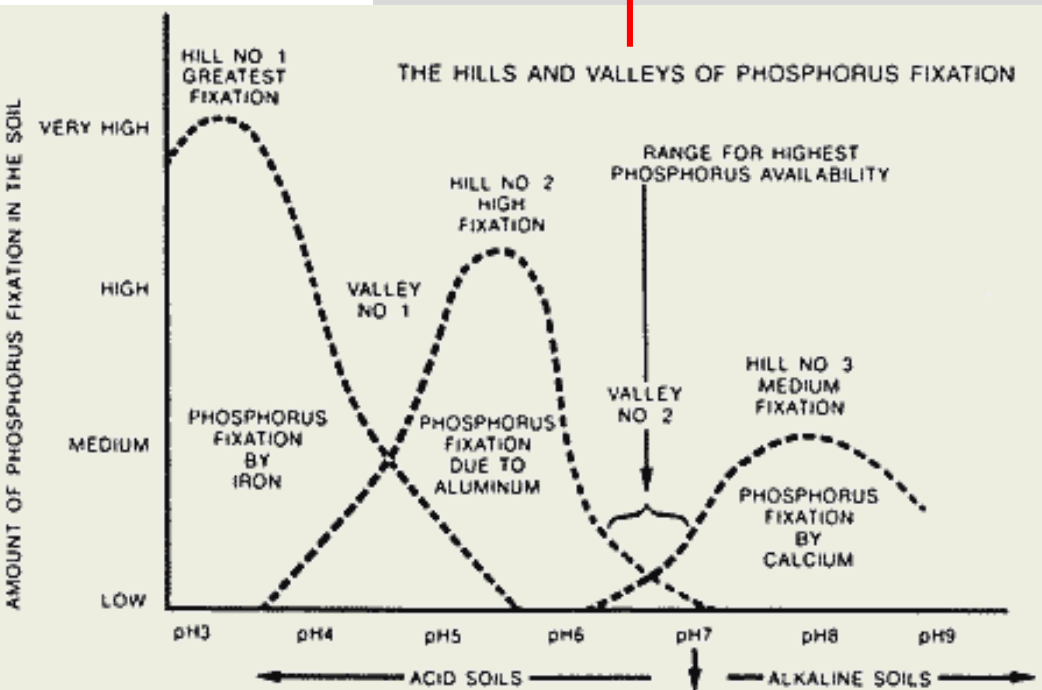


Lime Requirement and pH on Different Soils



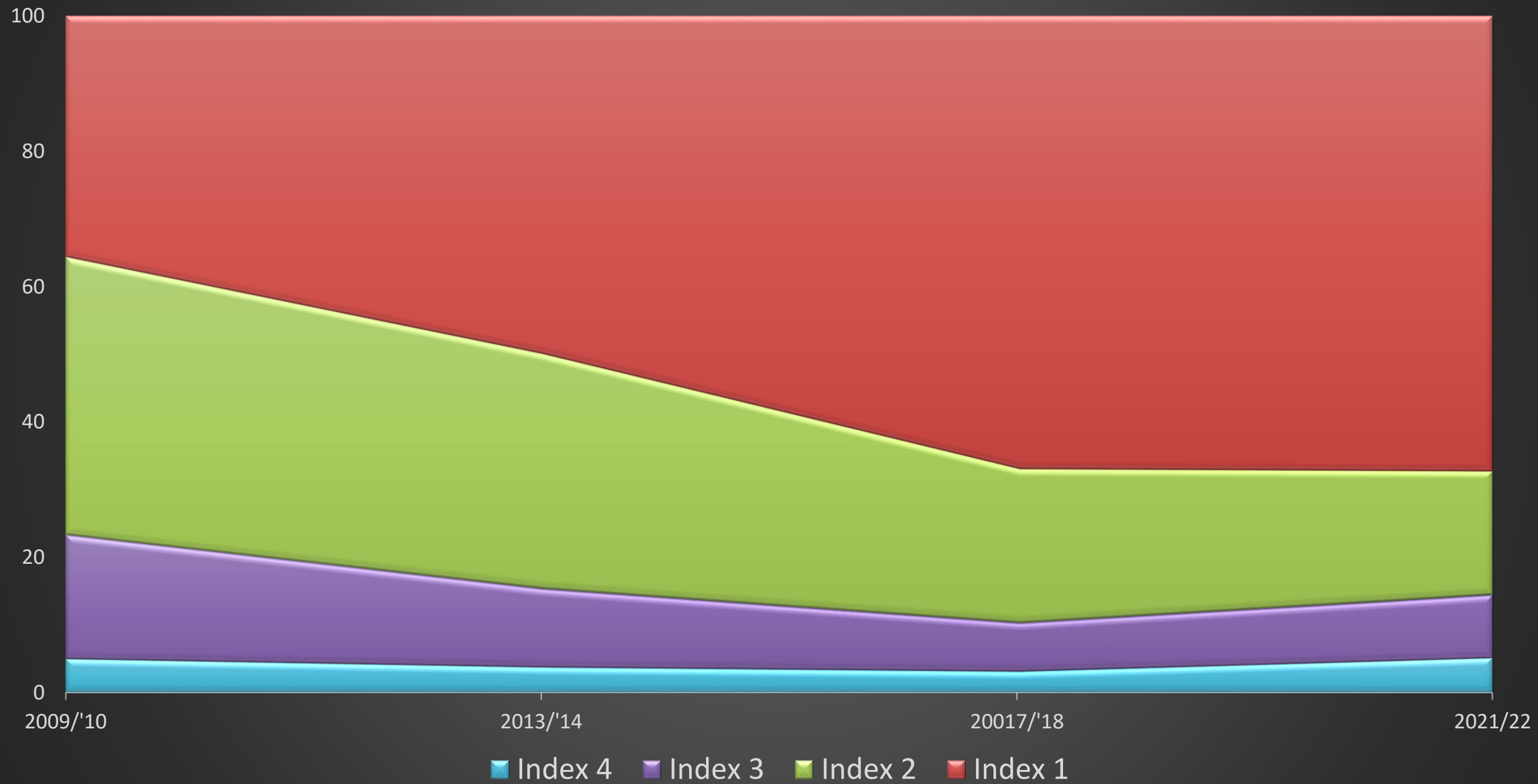
Example of pH effect on soil P

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

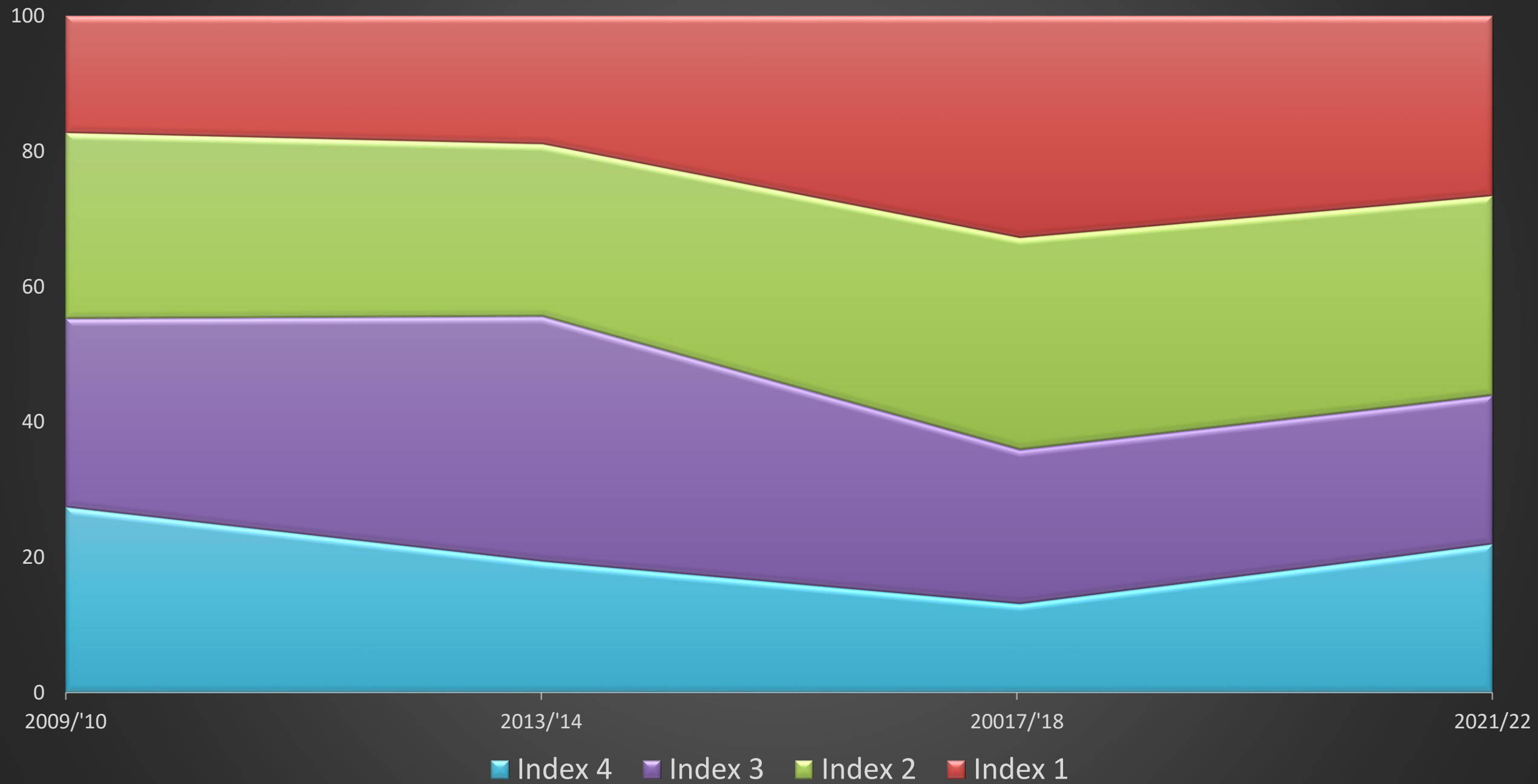


- pH below 5.8
 - High P fixation because of Al under aqueous form (really available)
 - P more likely to be locked-up by the soil
 - Morgan-P is low
- Large amount of P in the soil,
but not available for the plant

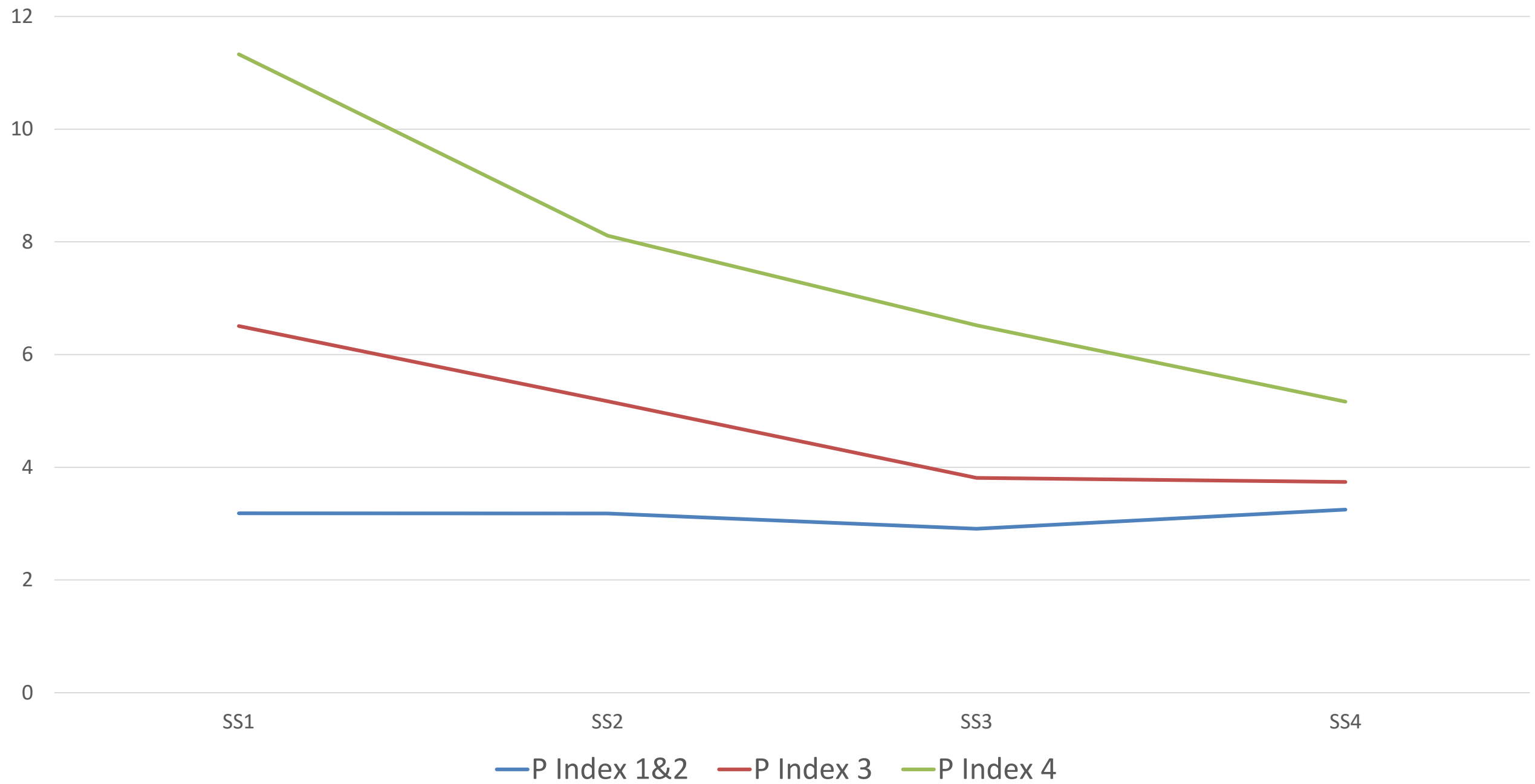
P Index: Ballycanew



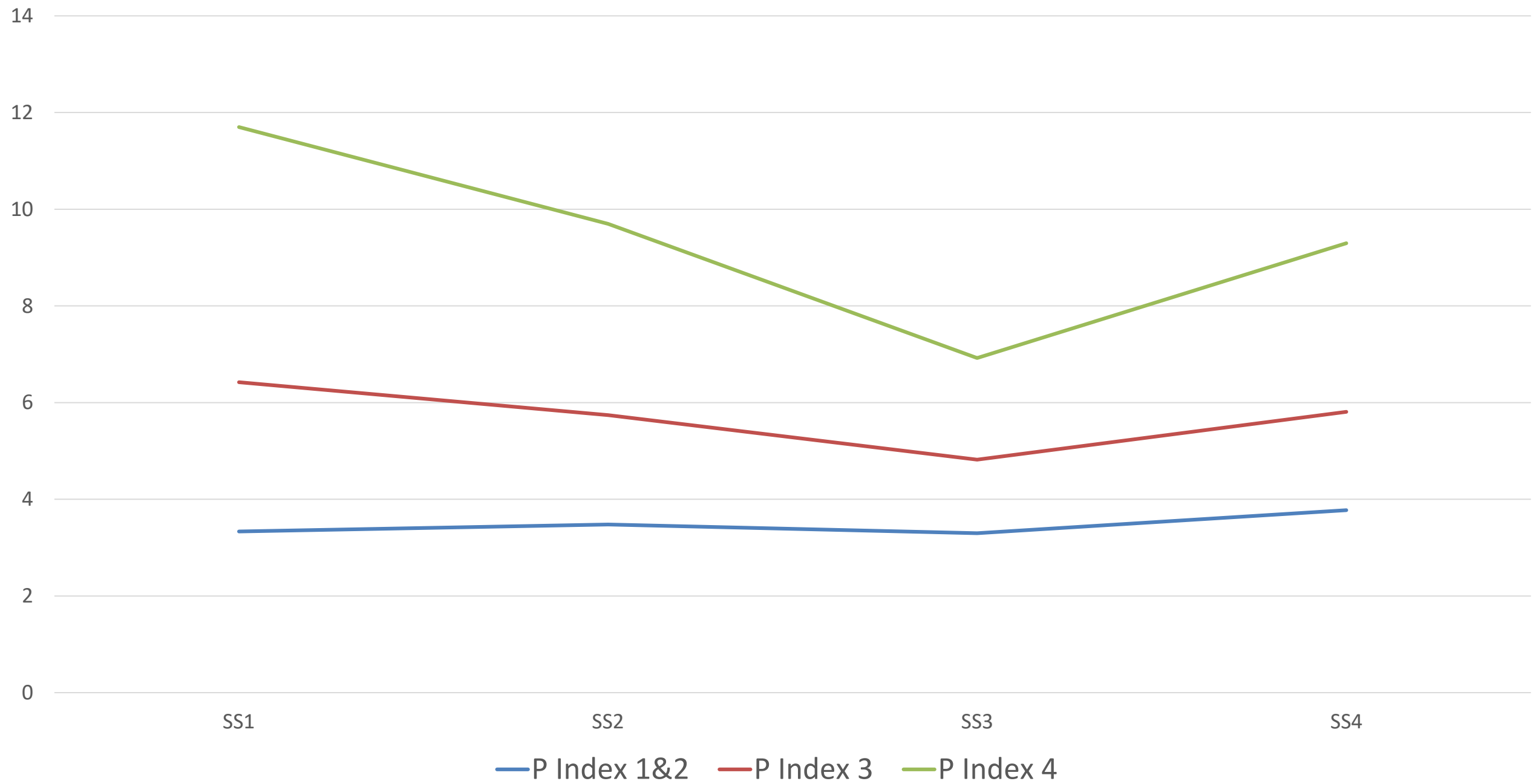
P Index: Timoleague



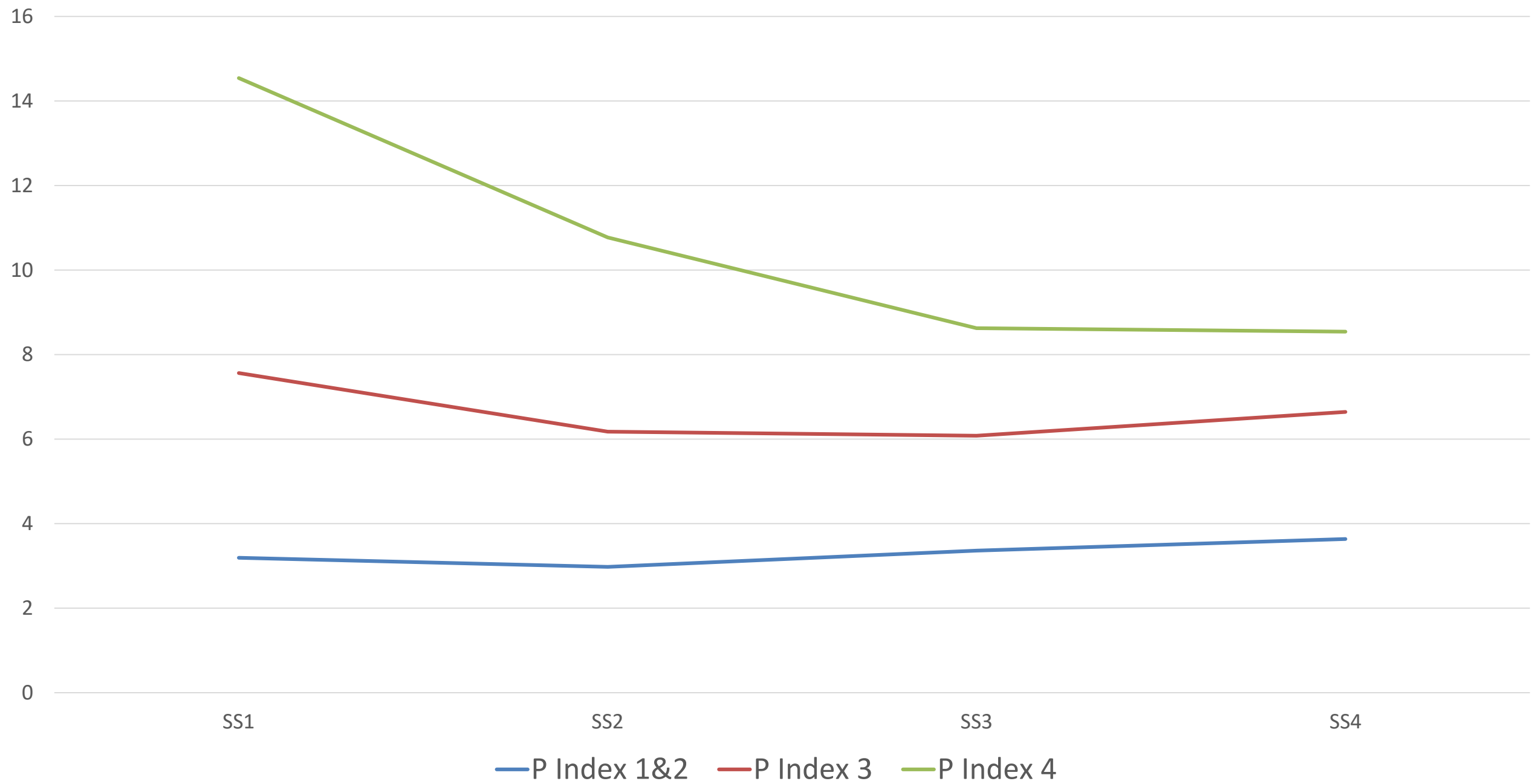
P Morgan (ppm) Trends - Drystock



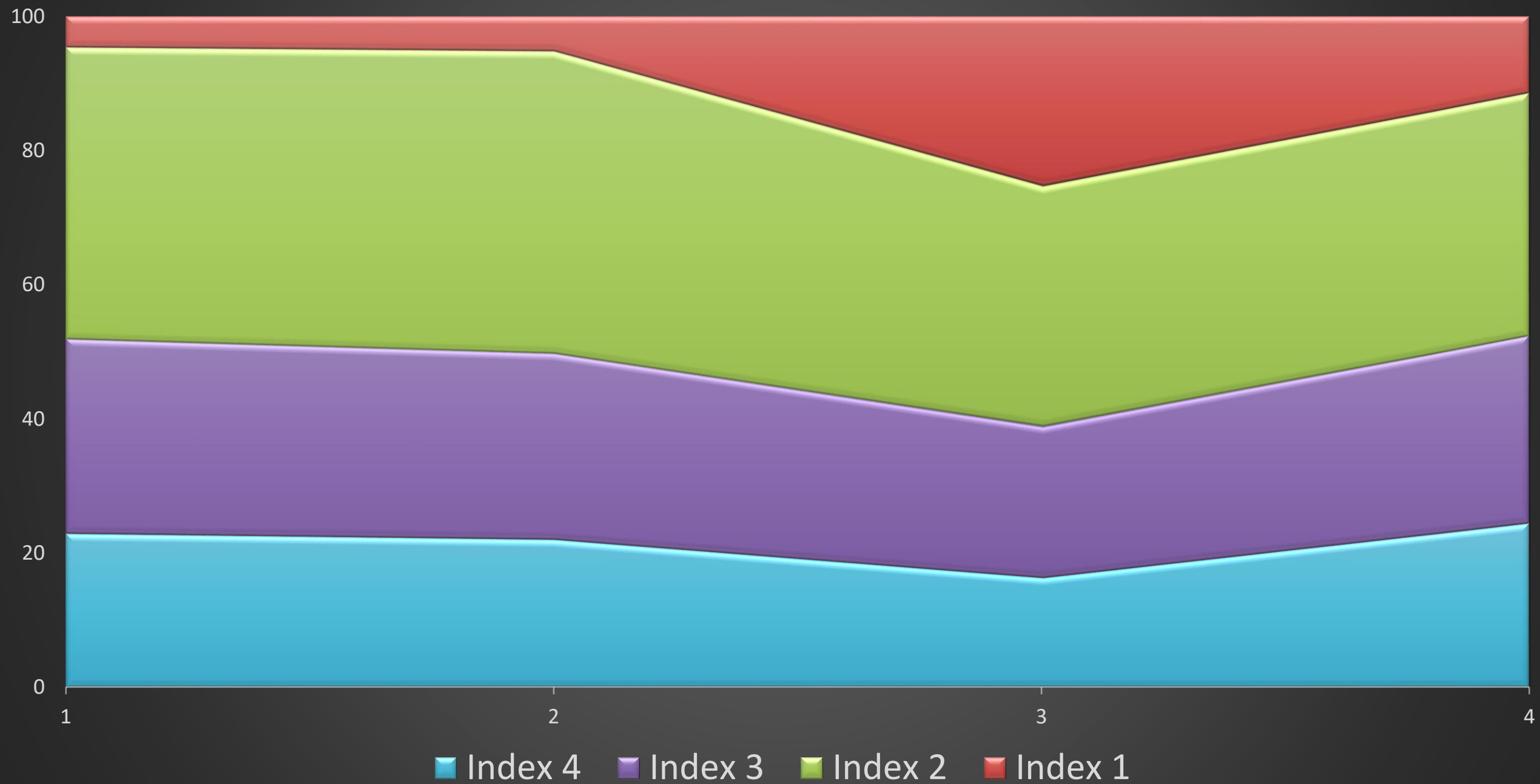
P Morgan (ppm) Trends - Dairy



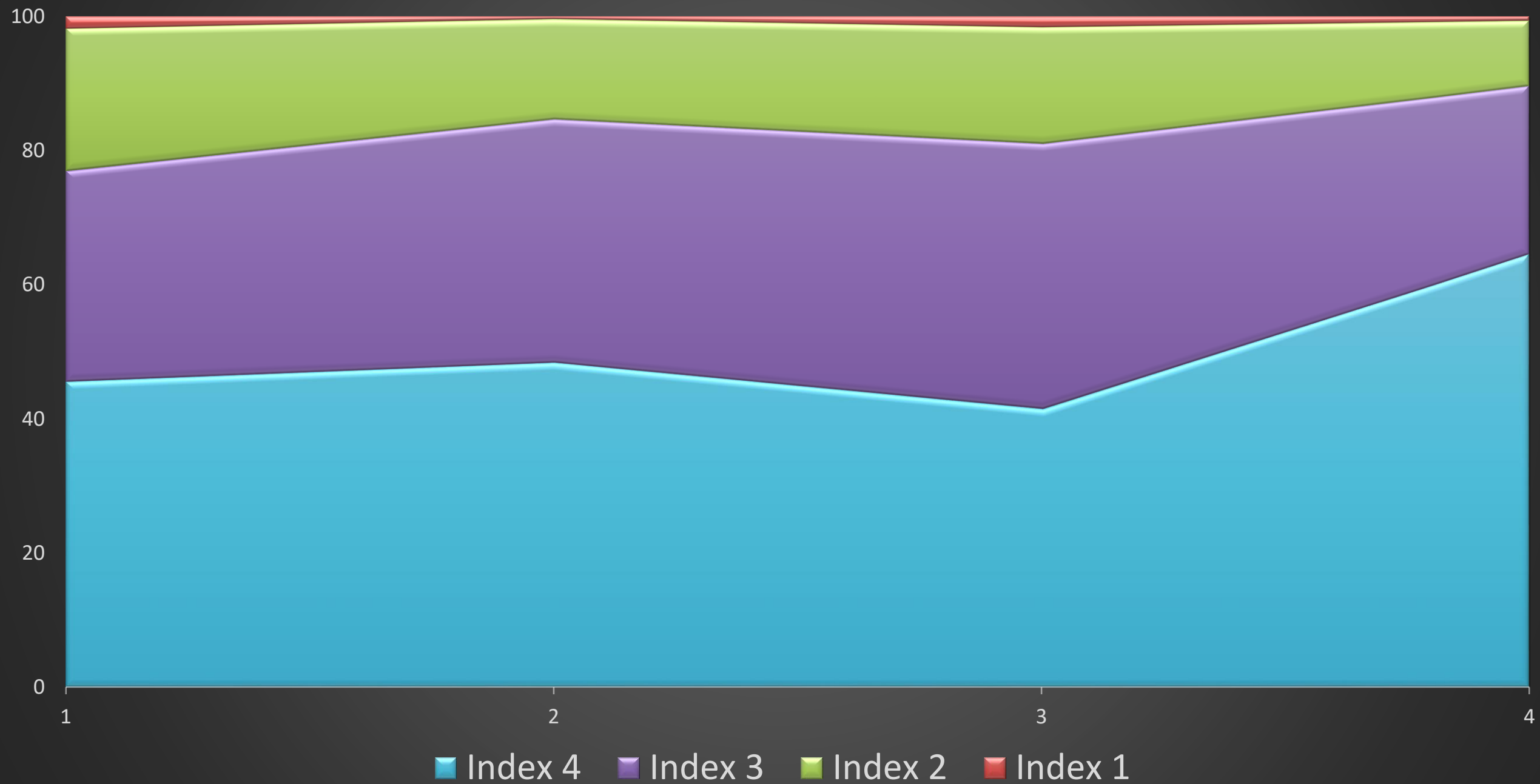
P Morgan (ppm) Trends - Tillage



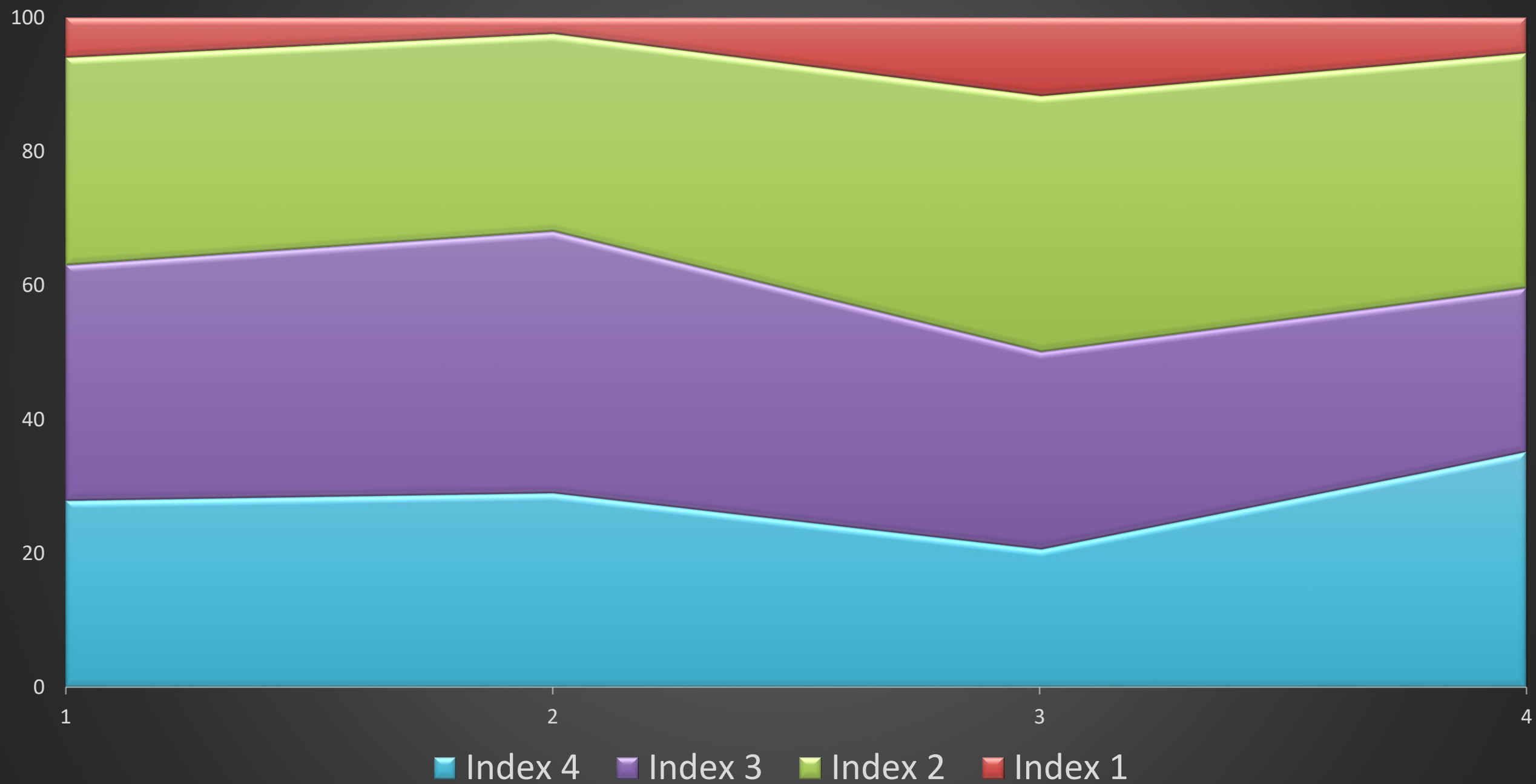
K Index: Ballycanew



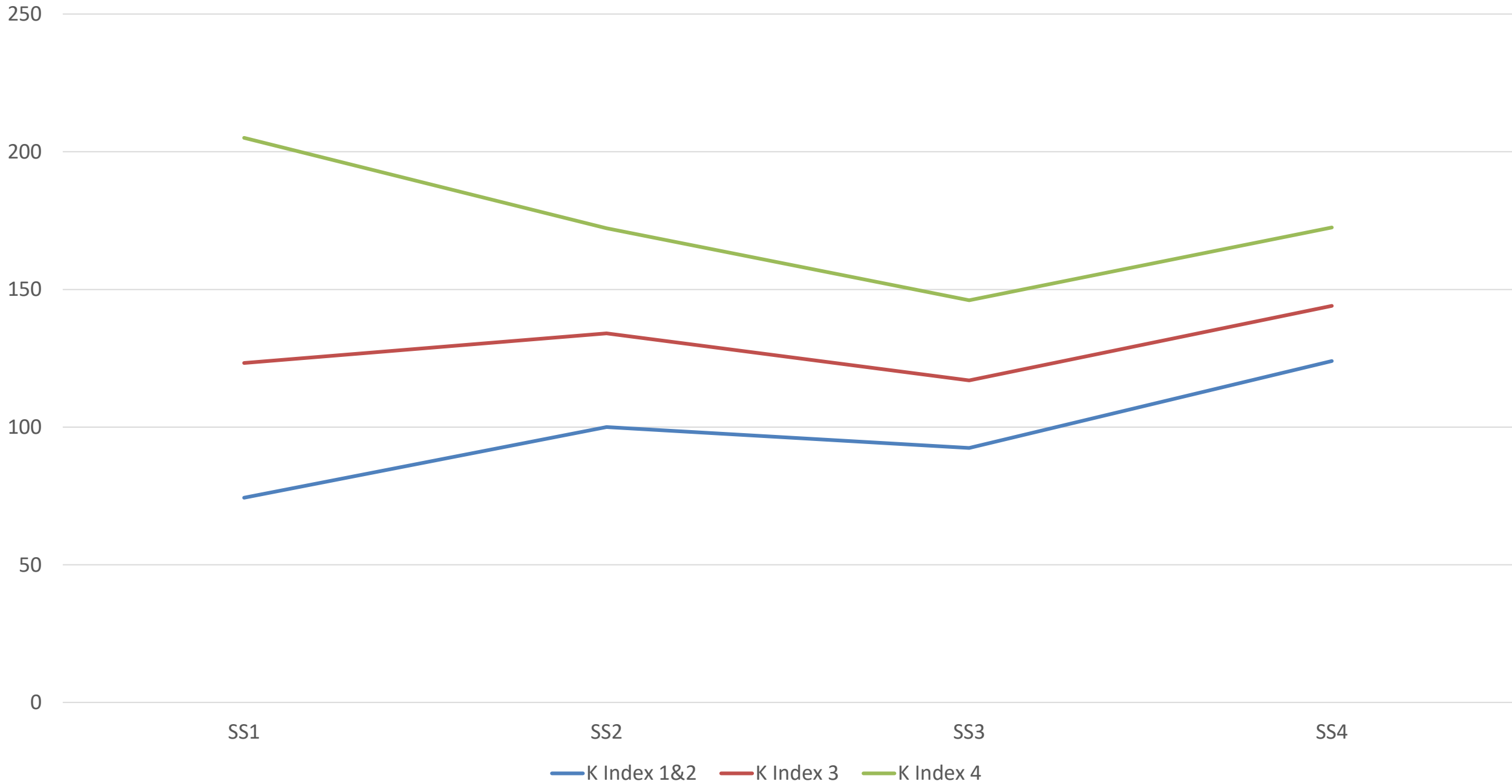
K Index: Castledockrell



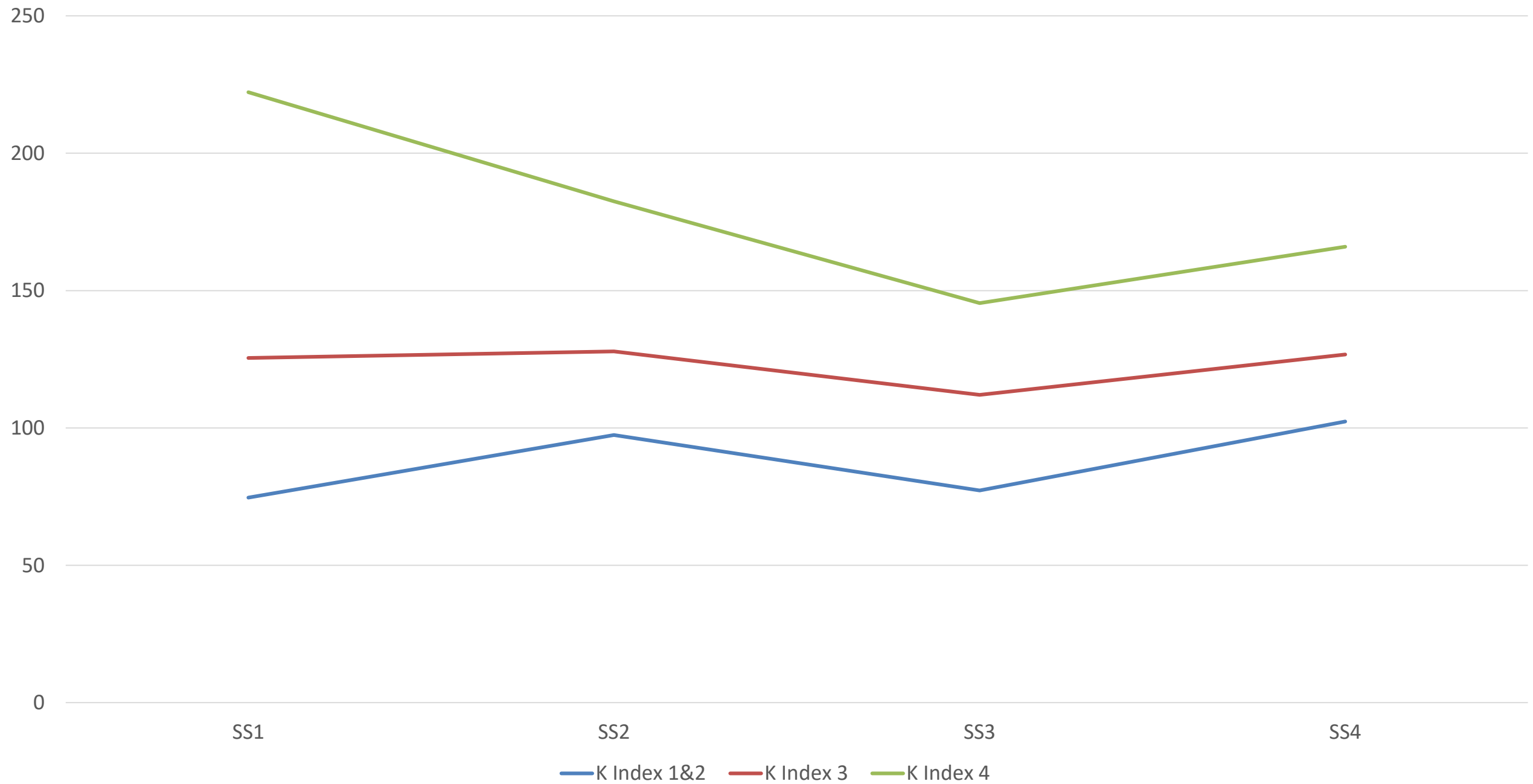
K Index: Timoleague



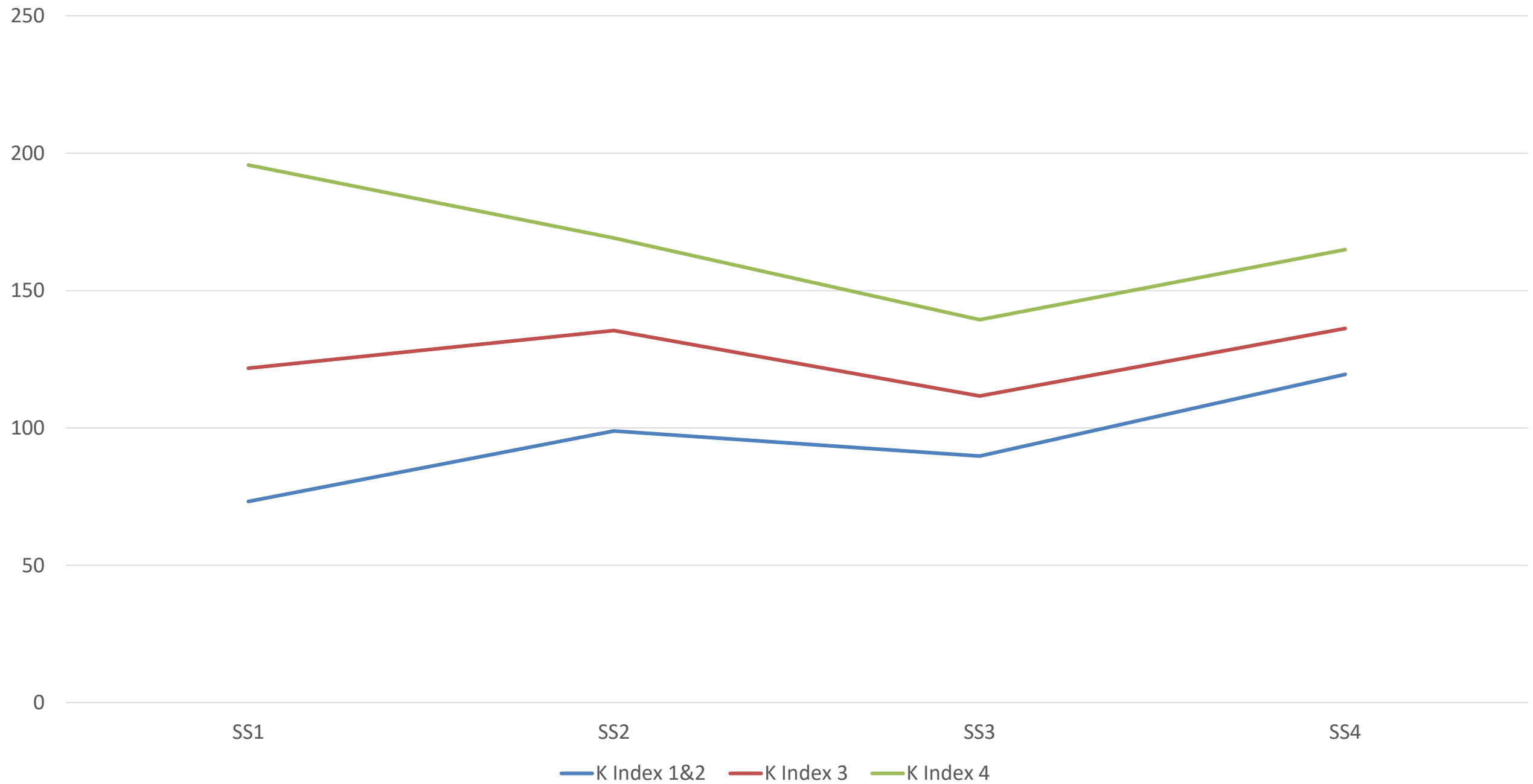
K Morgan (ppm) Trends – All Catchments



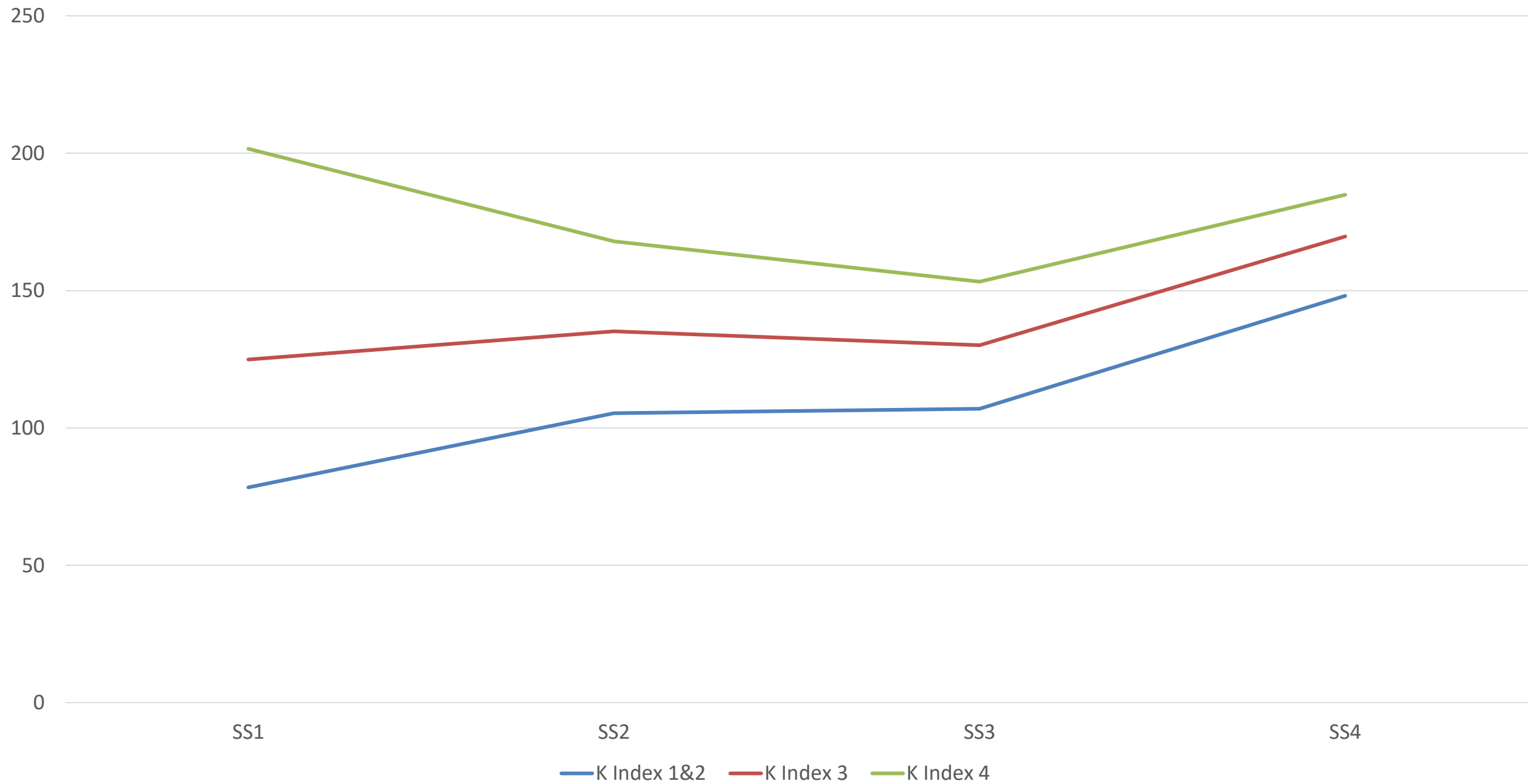
K Morgan (ppm) Trends - Drystock



K Morgan (ppm) Trends - Dairy

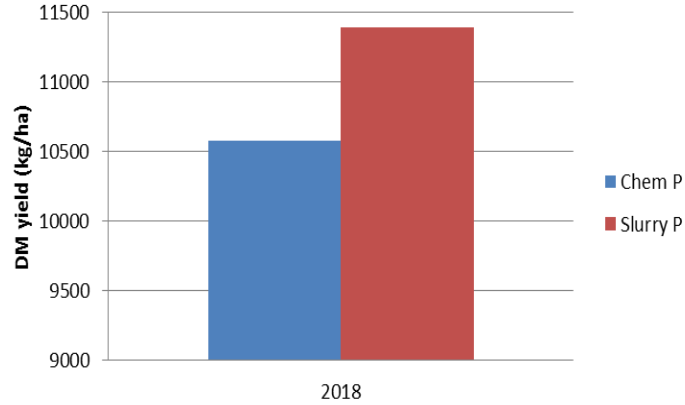


K Morgan (ppm) Trends - Tillage

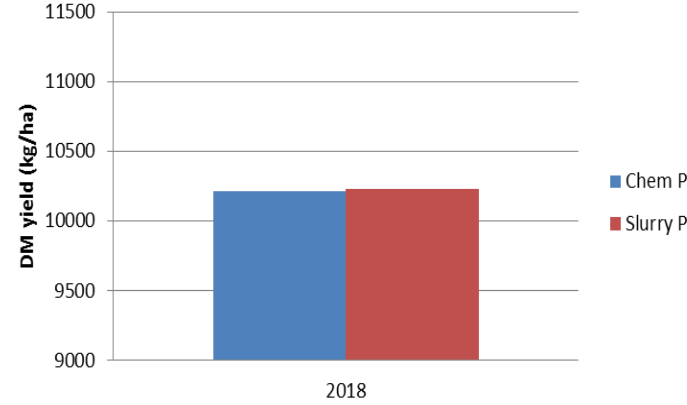


P response Cattle Slurry vs. Chemical

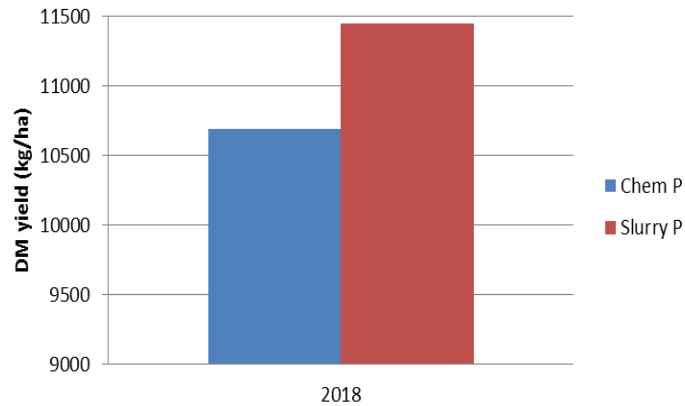
Ballycanew



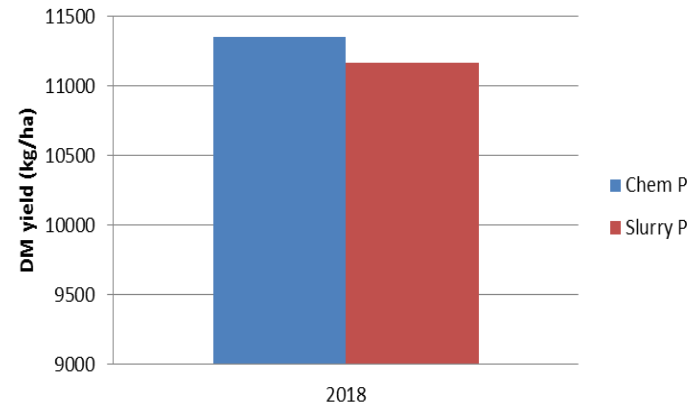
Cregduff



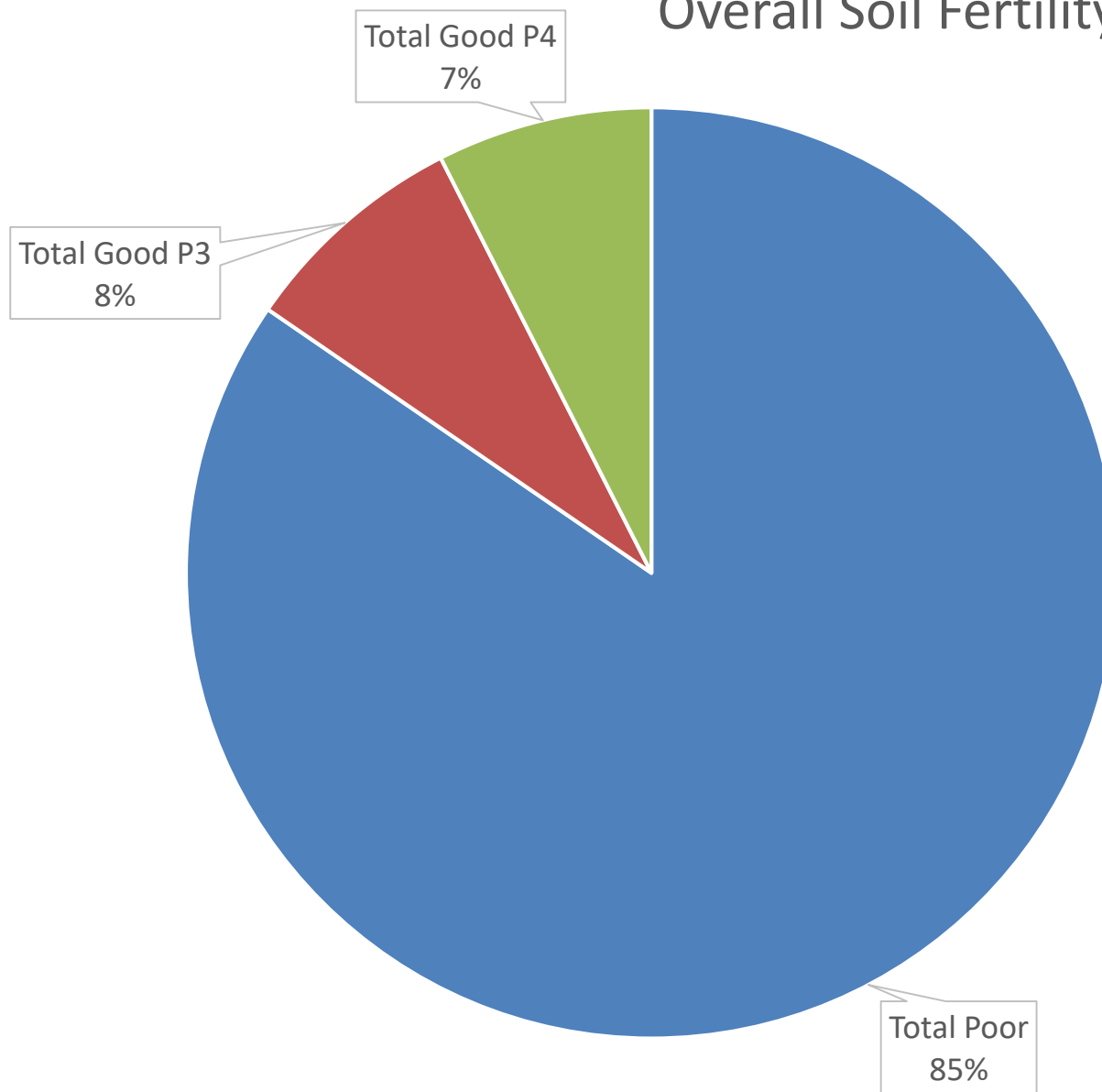
Dunleer



Timoleague

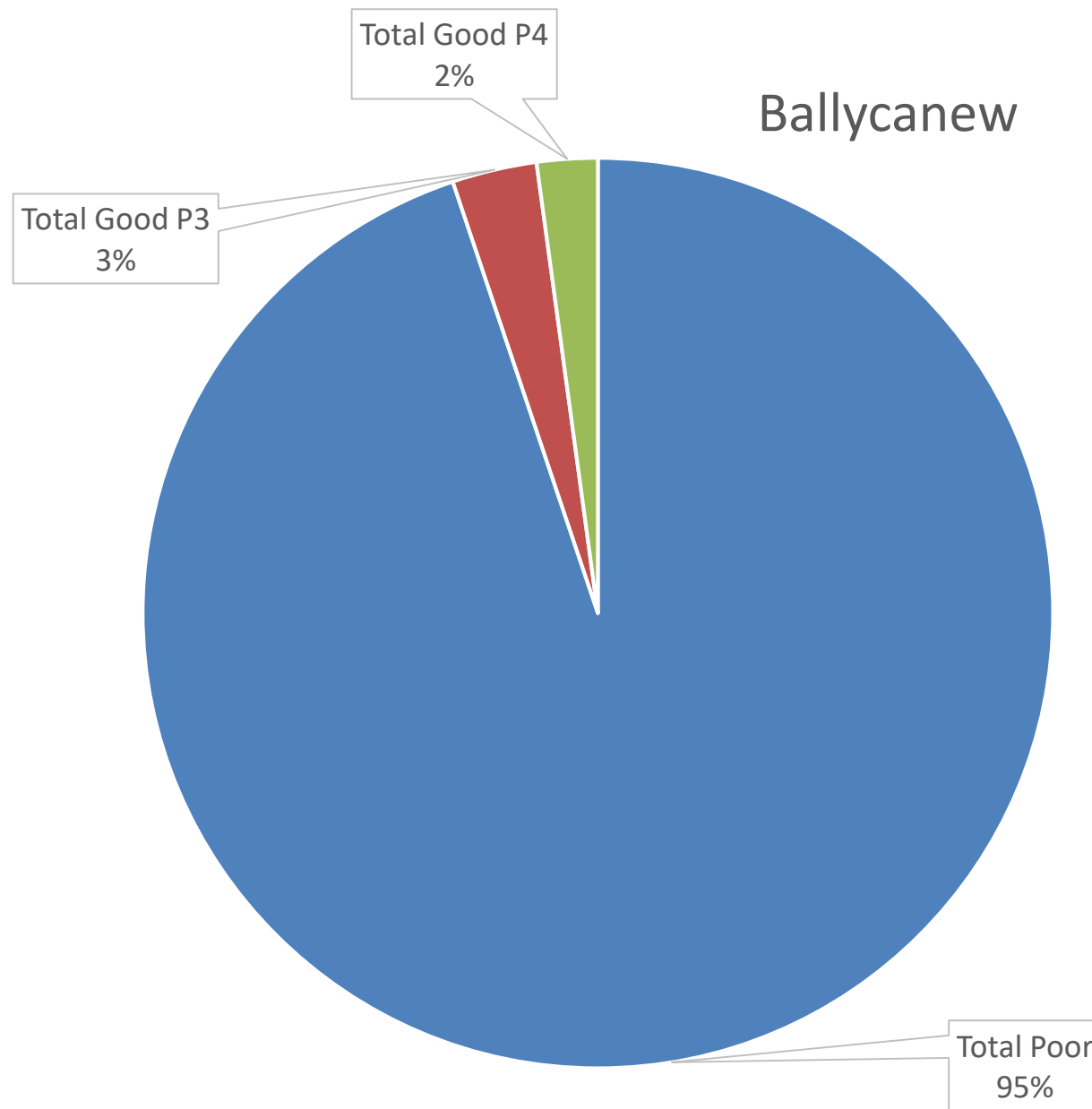


Overall Soil Fertility – All Catchments



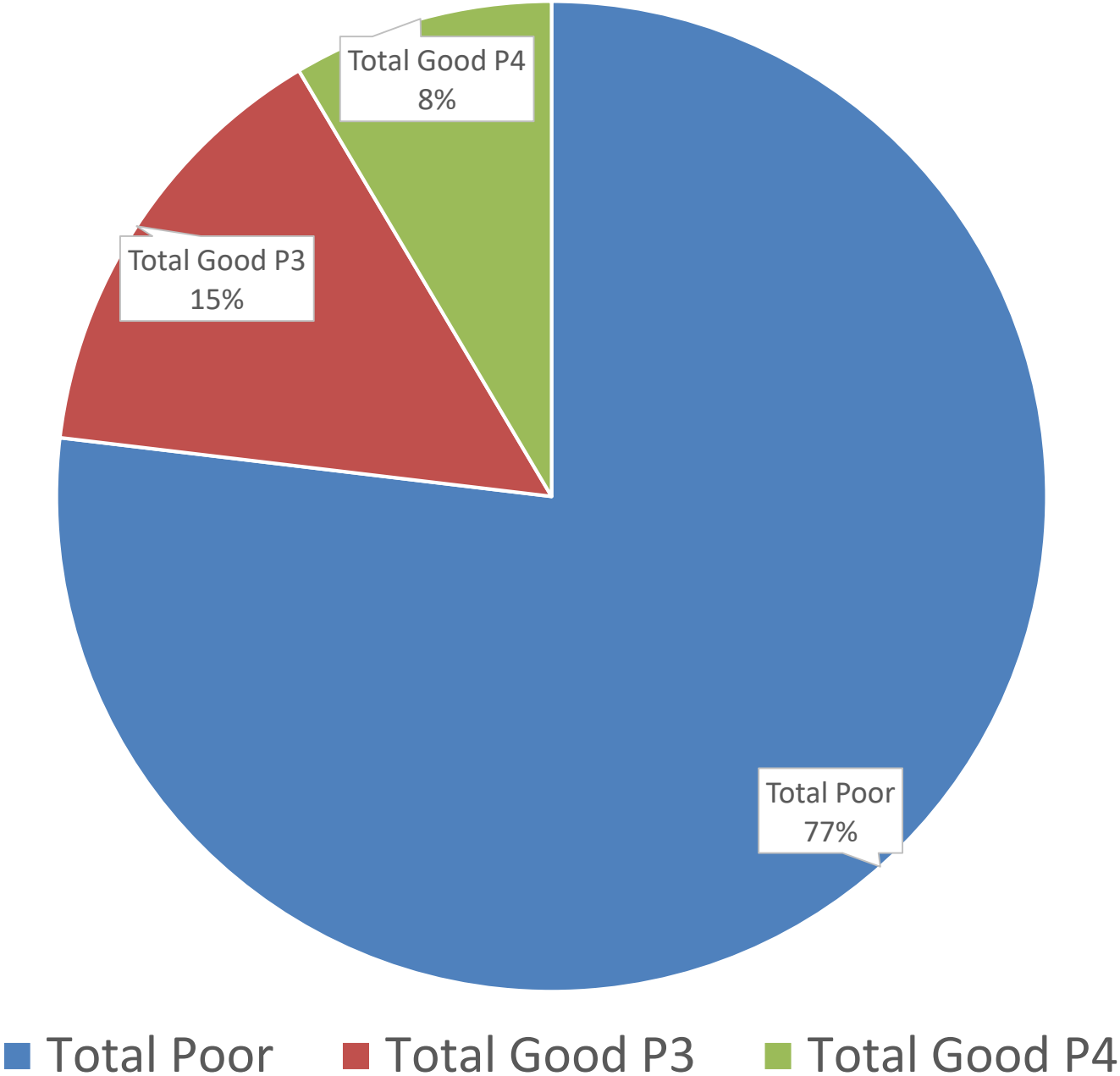
■ Total Poor ■ Total Good P3 ■ Total Good P4

Ballycanew

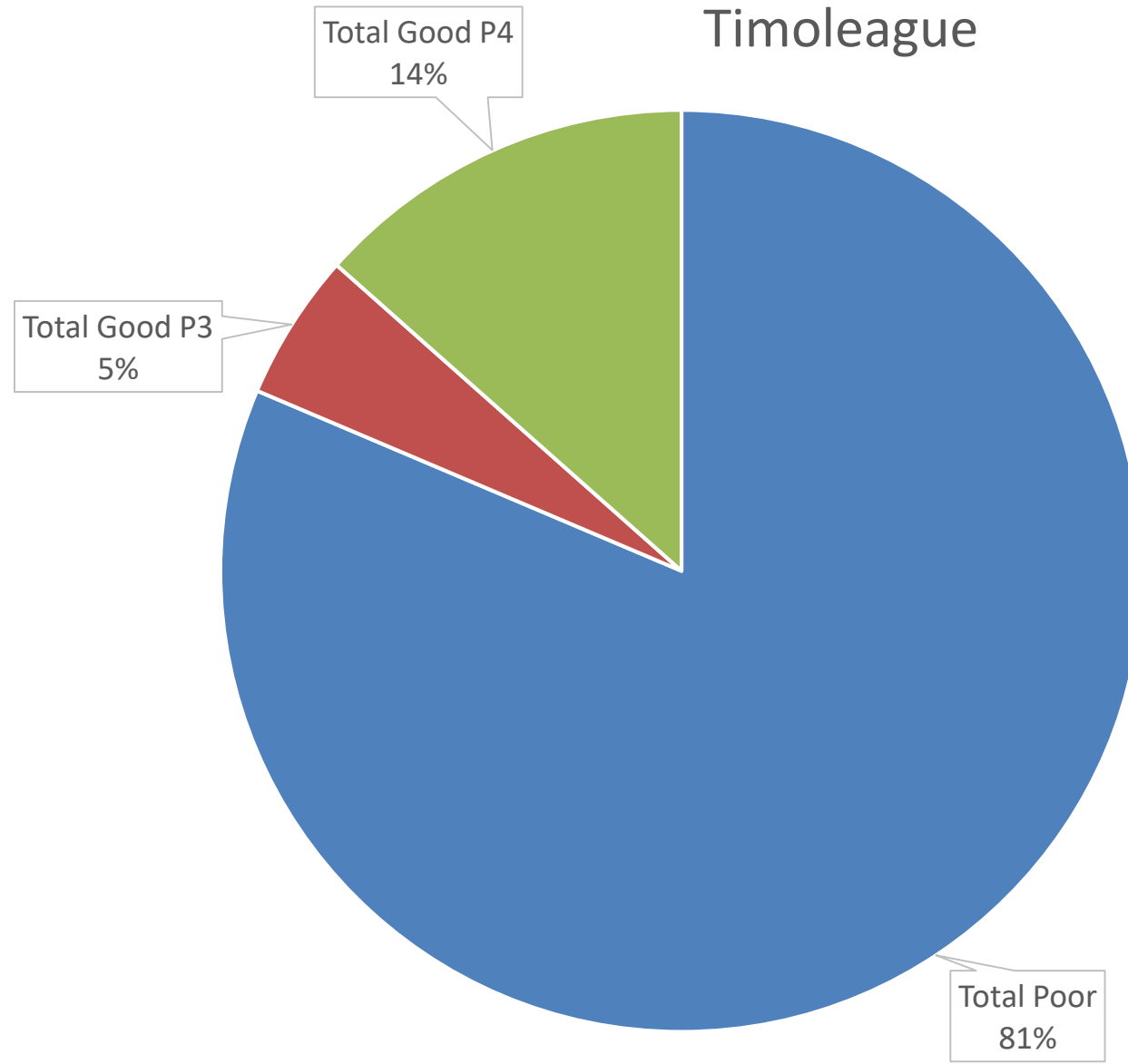


■ Total Poor ■ Total Good P3 ■ Total Good P4

Castledockrell



Timoleague



■ Total Poor

■ Total Good P3

■ Total Good P4

Fertiliser Prices

Fertiliser product	2021	2021 August*	2021 October**
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
* Mark Plunket September		**ca. Based on current trading prices	

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

