

Teagasc Soil Fertility Report 2024

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Authors

Veronica Nyhan, Soil and Plant Nutrition Specialist, Oak Park
Mark Plunkett, Signpost Programme Training & Development Specialist, Johnstown Castle
David Wall, Soil Scientist, Johnstown Castle
Pat Murphy, Head of Environment Knowledge Transfer, Johnstown Castle
Michael Hennessy, Head of Crops Knowledge Transfer, Oak Park

The information in this publication is based on soil analysis carried out by Teagasc for its clients.

Further Information available at

http://www.teagasc.ie/soil/analysis/results.asp

Acknowledgement

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Introduction

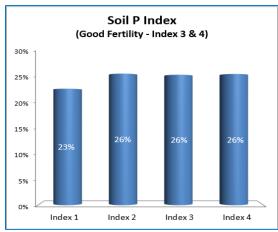
Having reported on soil analysis results since the 1950's, playing a key role in the research and development of soil testing and nutrient advice for Irish soils, Teagasc delivers a soil testing facility for clients as part of its fertiliser planning (NMP Online) service to give advice on the efficient use of nutrients for crop production. Getting the soil basics right, such as optimising soil pH and applying phosphorus (P) and potassium (K) in a balanced programme, is a key part of all economically and environmentally sustainable production systems. Soil testing is a crucial and low cost technology that enables the strategic application of fertilisers and organic amendments to crops. Applying the right source of nutrients, at the right rate and the right time to the right place prevents nutrient loss to water, reduces greenhouse gas emissions and protects soil biodiversity.

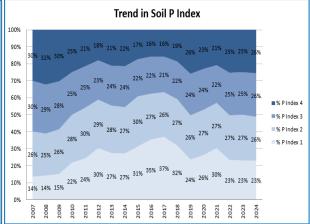
Teagasc maintain a database of soil test results analysed annually to monitor soil fertility trends over time for the major soil nutrients (pH, P & K). The soil samples are not matched for each farm from year to year but, due to the large number, it provides a very solid insight as to how soil fertility trends are changing over a 4 to 5 year period which reflects the soil sampling interval on these farms. In addition the soil database is quite large with anything from 30,000 to 75,000 soil samples analysed annually. Some care should be taken in interpretation of data as the reasons for soil sampling can vary from year to year, for example, a significant requirement for sampling in relation to agri-environment schemes can impact on trends.

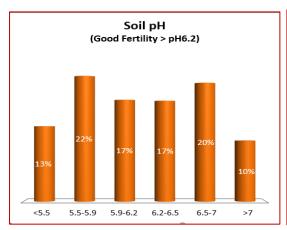
Soil fertility trends are graphically presented on a national and county by county basis and provide an insight into soil fertility status and changes over time for each county. This information tends to be quite reflective of the county soil types and farming enterprises practiced. This is very useful for farmers, advisors and policy makers on guiding lime and fertiliser advice for systems of production to meet requirements. It may also be useful to guide more targeted national policy changes to meet future water and air quality targets.

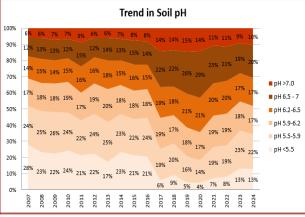
The publication consists of a number of graphs showing trends in all soil samples analysed since 2007. The data is further broken down on an enterprise basis for example dairy, drystock and tillage. The information is also presented on a county by county basis for each enterprise. Each report contains four pieces of information. The current percentage of soils at each of the 4 indexes for P and K and soil fertility trends since 2007 to 2024 (see examples below). Soil pH trends are presented in a similar format with five pH categories. The final graphic shows the percentage of soils with optimum soil pH, P & K.

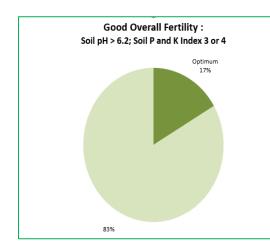
Examples of Soil Fertility Data

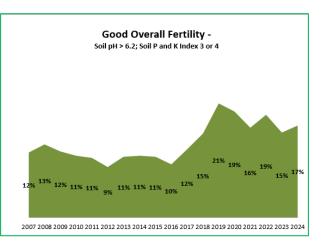












National soil fertility trends in recent years

A steady increase in lime, P and K fertiliser use from 2012 has resulted in some significant improvements in optimum soil fertility. In 2012, 36,294 passed through the Teagasc soil analysis service only 41% of which had optimum P fertility. 47% were optimum for K and 34% optimum for pH. Just 9% of soil samples analysed had optimum fertility across P, K and pH altogether. In 2024, 69,218 samples were analysed, 52% of which were optimum for P, 57% optimum for K and 47% optimum for pH. 17% of the samples tested showed optimum fertility. This improvement has come in spite of considerable challenges facing the agricultural sector in recent years.

Recent increases in lime usage saw 2022 generate the highest consumption of lime in Ireland since the turn of the century. However, poor weather conditions and associated trafficability issues in 2023 saw lime usage drop by nearly 27% and early indications are, for similar reasons, tonnage used in 2024 will likely be the same as last year or drop again. Optimising and maintaining soil pH is the first step in improving the efficiency of all other applied nutrients and the consistent application of lime to intensively managed acid mineral soils is a key in requirement to building soil resilience and maintaining soil fertility. Due to the rise in fertiliser prices in 2022, the national consumption of nutrient P and K in the form of chemical fertiliser both dropped by over 33% between 2021 and 2023. While K usage in 2024 rose 7.5% on the previous year, P has dropped a further 6.6%. Controlling fertiliser costs, while critical to farm profitability, should not be at the expense of mining valuable soil fertility levels. The challenge now and over the next number of years will be to continue to build our soil fertility on productive agricultural land.

More recently in 2023 Teagasc recorded a 300% increase in the number of soil samples submitted for analysis from the drystock sector, raising the total analysed sample count from ~38,000 in 2022 to ~75,000 in 2023. This increase was largely in response to requirements for ACRES (Agri-Climate Rural Environment Scheme) and the introduction of new regulations removing any phosphorus allowance from parcels without a valid soil report. The impact was a 4% drop nationally in the number of samples at overall optimum fertility from 19% in 2022 to 15% in 2023. It is important to remember however, that the target nutrient indices on marginal and biodiverse rich swards are not necessarily the same as for highly productive systems with high offtakes. Decisions related to nutrient management need to be taken with the output requirements and ecological value of the habitat mind.

Summary of national soil fertility data for 2024

In 2024, Teagasc analysed a total 69,471 soil samples, of which 92% represented grassland samples. For dairy farms, 21,093 soil samples were analysed, a decrease of 21% on the number analysed in 2023. 42,944 soil samples from drystock farms were analysed, an increase of 5% on the previous year. On tillage farms 4,747 soil samples were taken, which represents 31% decrease compared to 2023.

The following is a summary of the main changes for soil pH, P and K in 2024.

National Highlights

- The overall number of soil samples analysed dropped by 7.5% on 2023 with the decrease coming from the dairy and tillage sample set
- A slight improvement in soil fertility on 2023 with soils at optimum fertility increasing to 17% (+2%)
- Soil pH saw an improvement with 47% of soils analysed testing with >pH 6.2 (+2%)
- Soil P levels at Index 1 & 2 decreased to 49% (-1%)
- Soil K levels remain similar with a slight decrease (-1%) in soils at K index 1 &2

Enterprise Highlights

Dairy

- 24% of soils have optimum pH, P & K (5% increase)
- 61% of soils with a soil pH >6.2 (9% increase)
- 37% of soils at P index 1 & 2 (9% decrease)
- 38% of soils at K Index 1 & 2 (6% decrease)

Drystock

- 11% of soils have optimum pH, P & K (1% decrease)
- 38% of soils with a soil pH >6.2 (2% increase)
- 53% of soils at P index 1 & 2 (1% increase)
- 47% of soils at K Index 1 & 2 (2% increase)

Tillage

- 20% of soils have optimum pH, P & K (no change)
- 62% of soils with a soil pH >6.5 (1% increase)
- 55% of soils at P index 1 & 2 (1% increase)
- 33% of soils at K Index 1 & 2 (6% decrease)

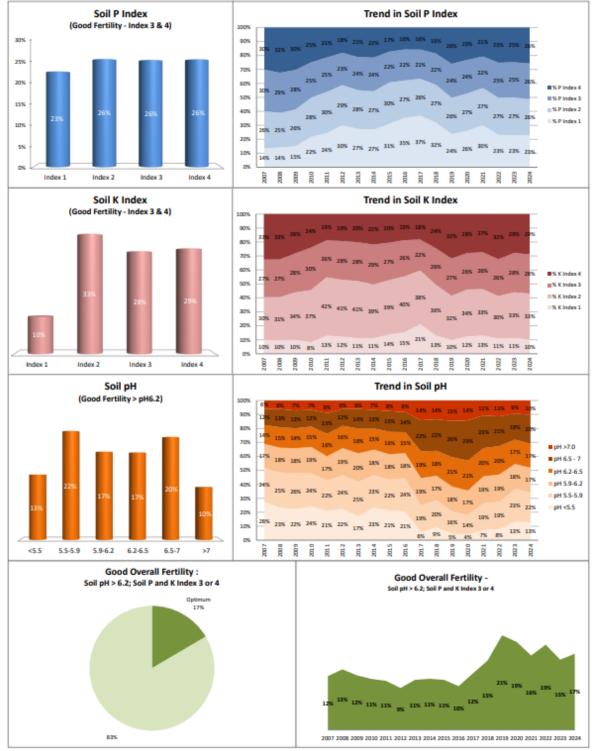
While on a national level, soil fertility trends changed little in 2024, on an enterprise level the data showed some noticeable differences. Samples taken from the dairy sector, in particular, showed substantial improvements on the results recorded in 2023 which was consistent across all parameters tested. This may be a consequence of improved liming, P build up allowances or the enhanced knowledge transfer through mandatory derogation training requirements to this sector over the last number of years now showing dividends. It is particularly encouraging following a period of very high fertiliser prices which this sector appears to have overcome without forfeiting innate soil fertility. According to these results, over one third of the 2024 dairy sample set is in index 4 for both P and K. These high index soils will naturally supply the fertility needs of the crop for the year ahead, reducing costs and providing the opportunity to strategically divert organic and chemical P, K applications to the low index soils building whole farm fertility. It will be interesting to see if the trends continues into the future.

Another noticeable trend is the improvement of the soil potassium levels under tillage systems, and again the increase was largely in the index 4 category. Continued analysis will indicate if this response is a consequence of the introduction of the straw incorporation measure in 2021.



County Year Enterprise Number of Samples

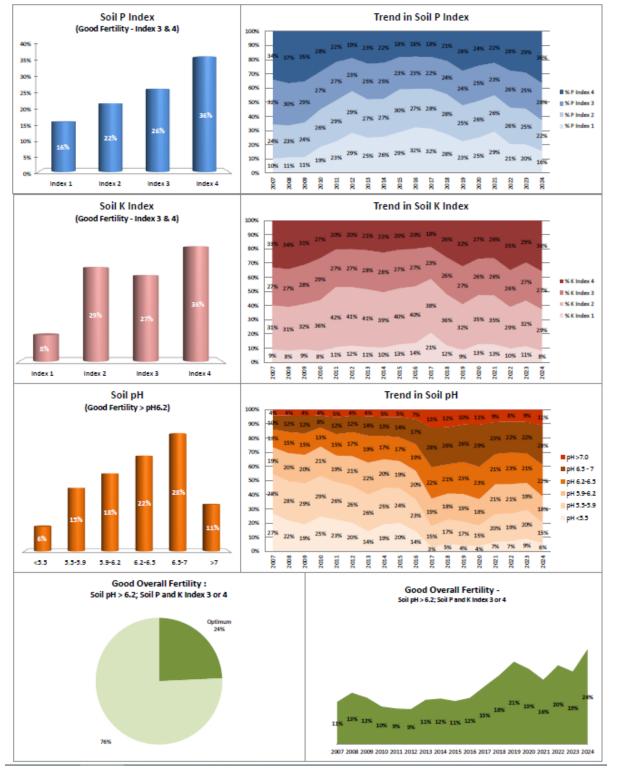
All Counties 2024 All Farms 69,218





County Year Enterprise Number of Samples

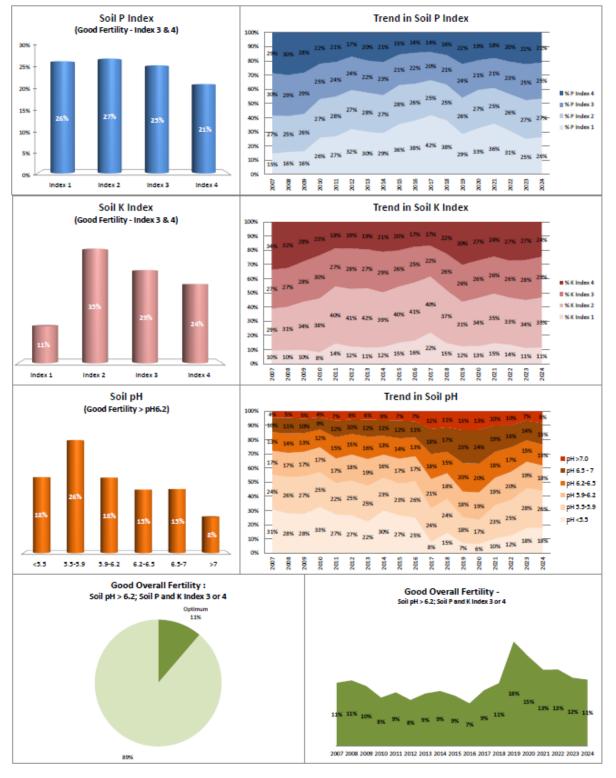
All Counties
2024
Dairy
Samples
21,041





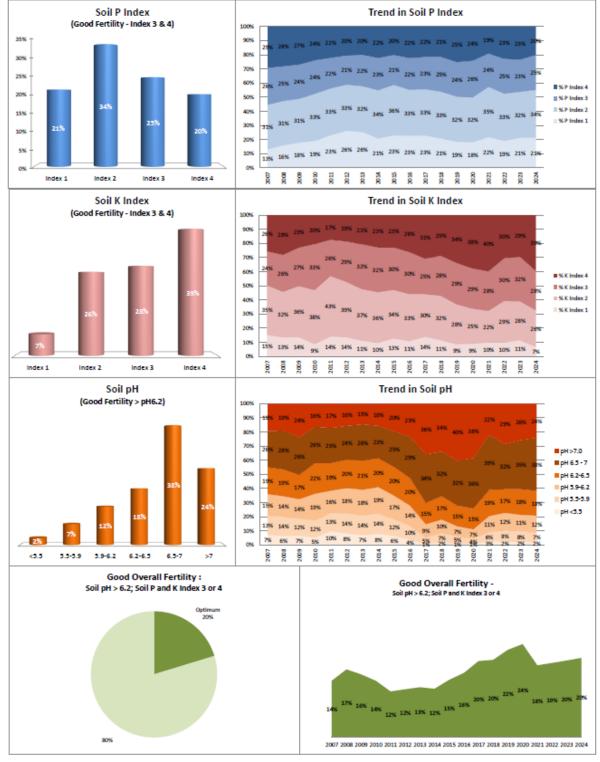
County Year Enterprise Number of Samples

All Counties 2024 Drystock 42,834





County Year Enterprise Number of Samples All Counties 2024 Tillage 4,670



County based soil fertility trends 2024

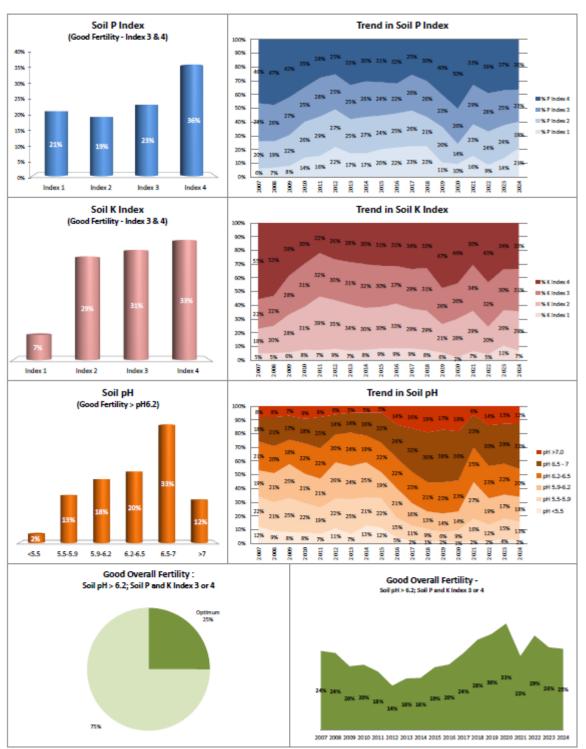
Carlow soil fertility results 2024

All enterprises



Soil Analysis Status and Trends

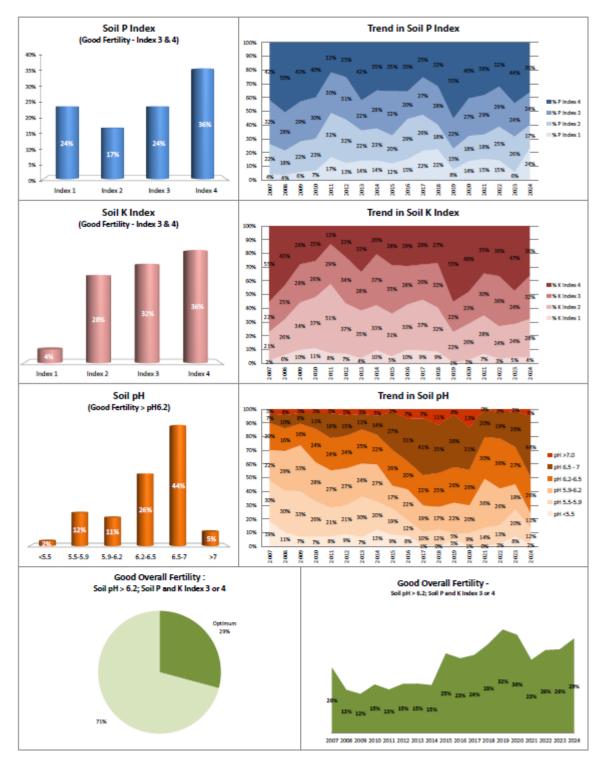
County Year Enterprise Number of Samples Carlow 2024 All Farms 326





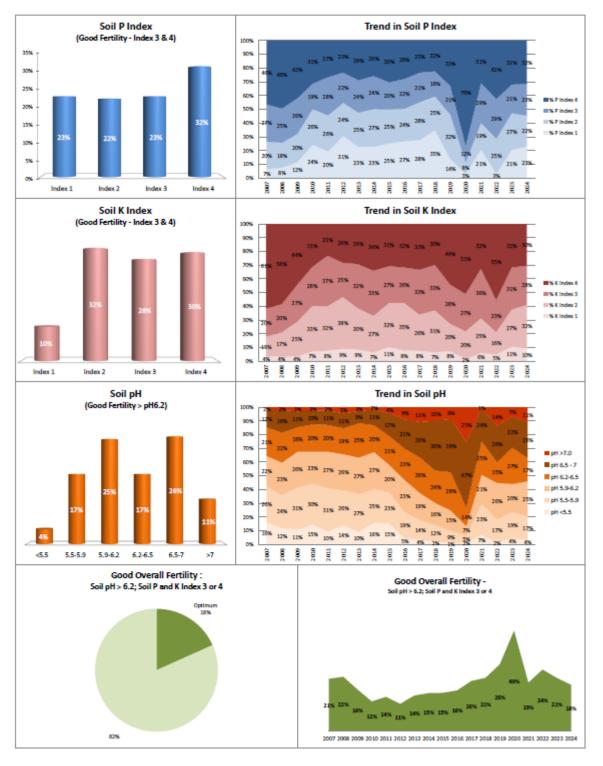
Cour Year Ente Nun

nty	Carlow
r	2024
erprise	Dairy
nber of Samples	114



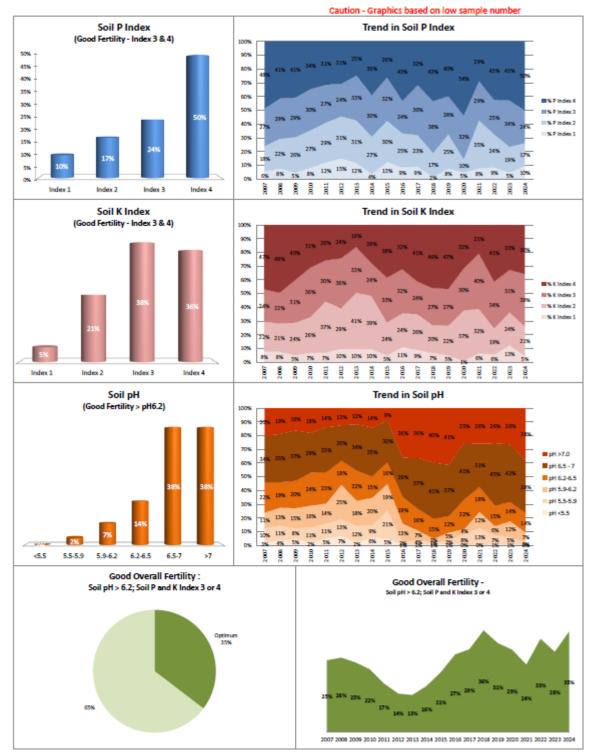


County Year Enterprise Number of Samples Carlow 2024 Drystock 165





County Year Enterprise Number of Samples Carlow 2024 Tillage 42



Cavan soil fertility results 2024

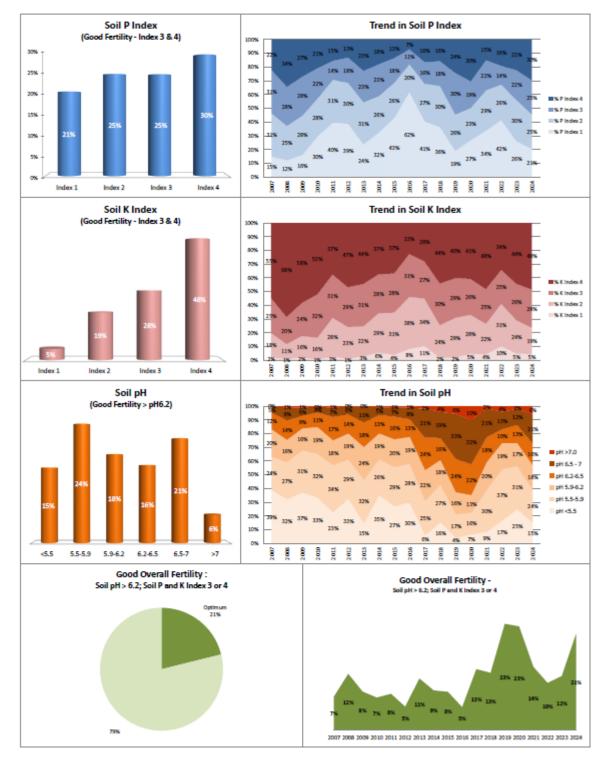
All enterprises



Soil Analysis Status and Trends

County Year Enterprise Number of Samples

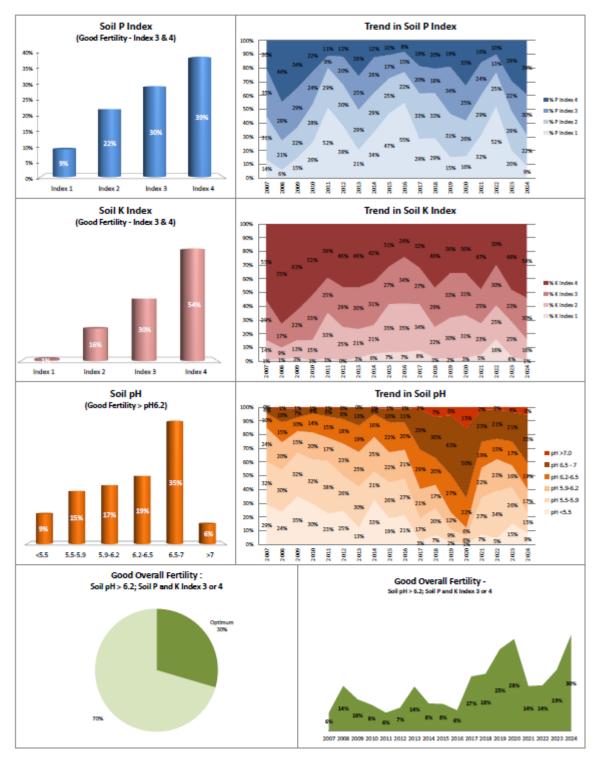
	Cavan
	2024
All	Farms
	1,115





County Year Enterprise **Number of Samples**

Cavan 2024 Dairy 348

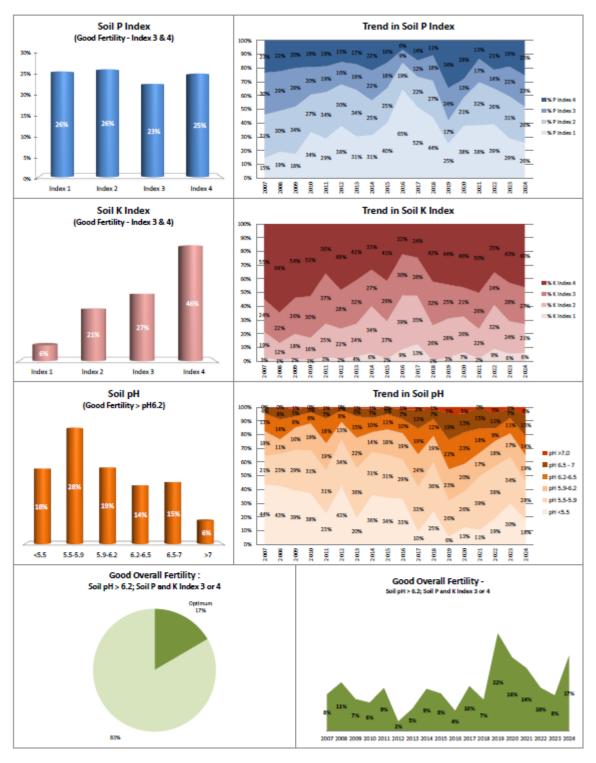


Drystock



Soil Analysis Status and Trends

County Year Enterprise Number of Samples Cavan 2024 Drystock 765



Tillage-Insufficient sample set available

Clare soil fertility results 2024

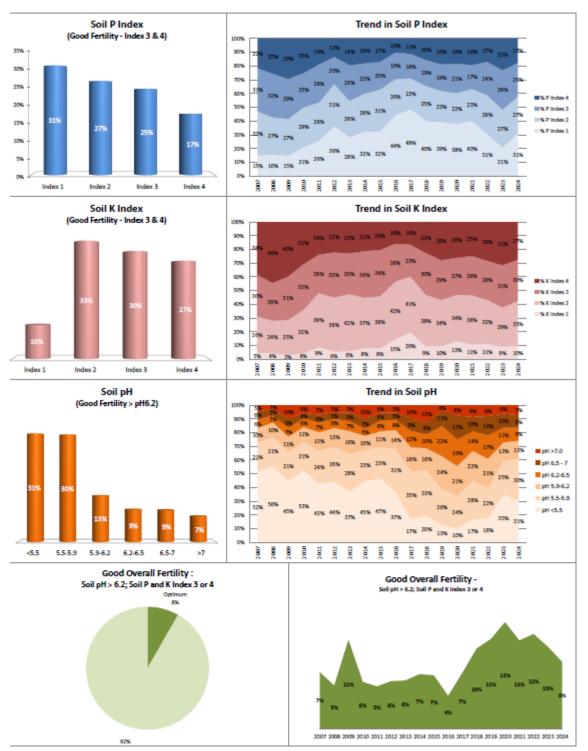
All enterprises



Soil Analysis Status and Trends

County Year Enterprise Number of Samples

	Clare
	2024
	All Farms
les	5,903



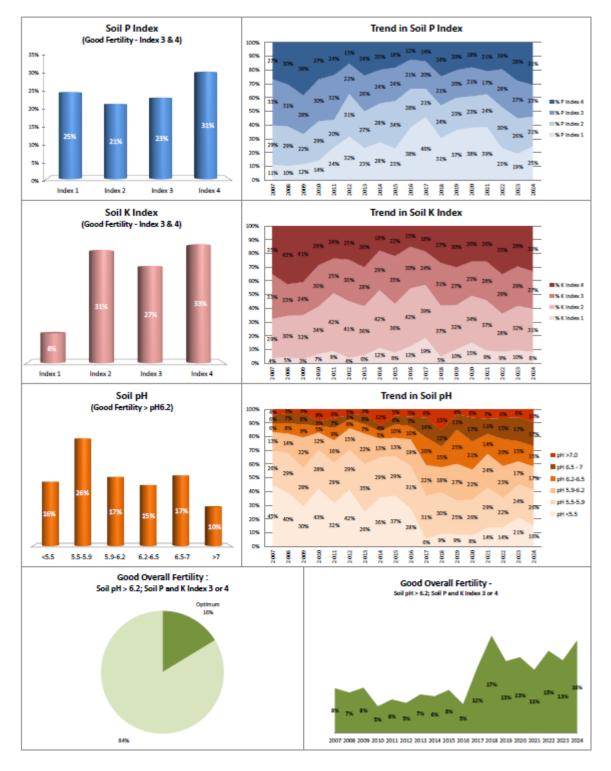
Dairy



Soil Analysis Status and Trends

County Enterprise **Number of Samples**

Clare 2024 Dairy 775



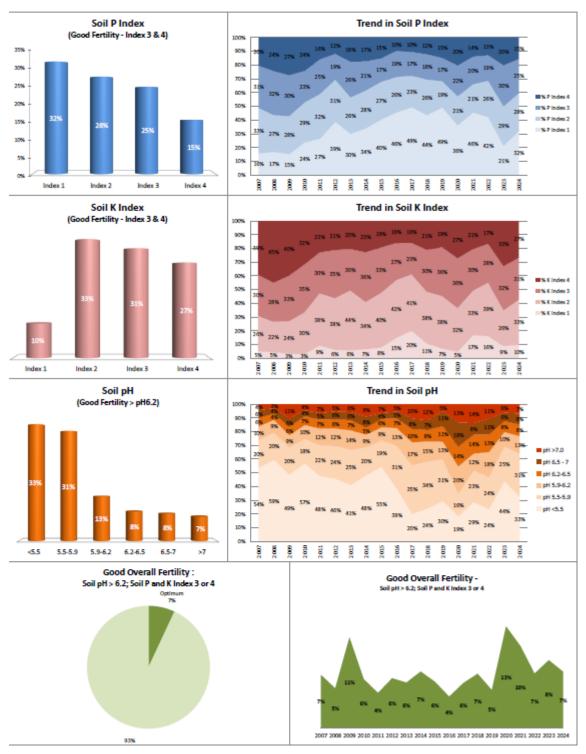
Drystock



Soil Analysis Status and Trends

County Year Enterprise Number of Samples

| Clare | 2024 | Drystock | F Samples | 5,110 |



Tillage
Insufficient data set available

Cork soil fertility results 2024

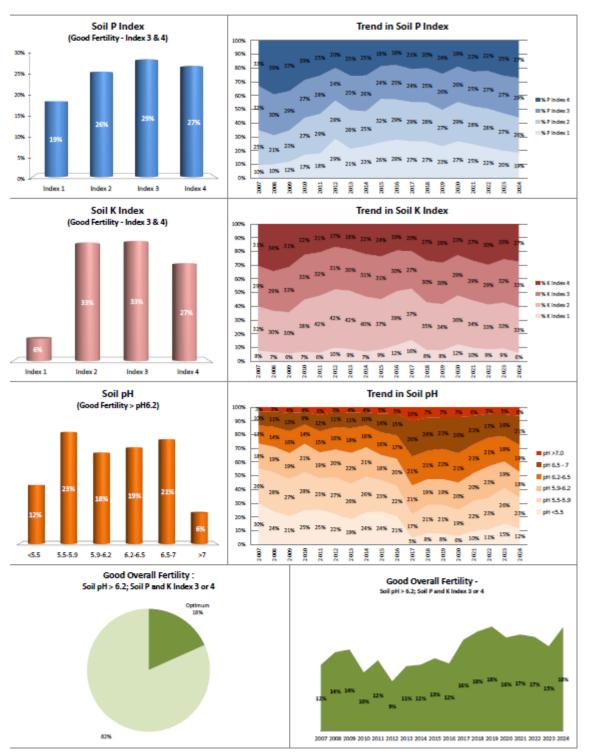
All enterprises



Soil Analysis Status and Trends

Cour Year Ente Num

nty	Corl
•	2024
rprise	All Farms
nber of Samples	7,507



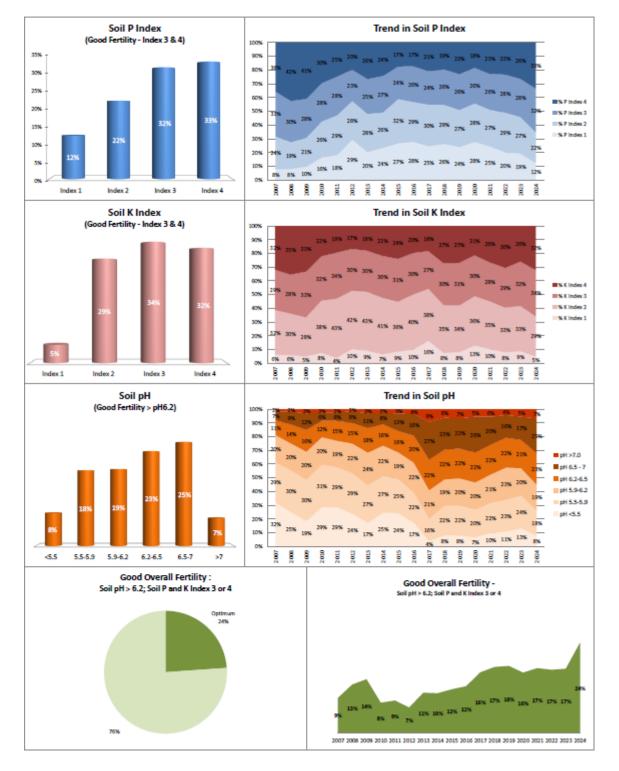
Dairy



Soil Analysis Status and Trends

County Year Enterprise **Number of Samples**

Cork 2024 Dairy 3,445

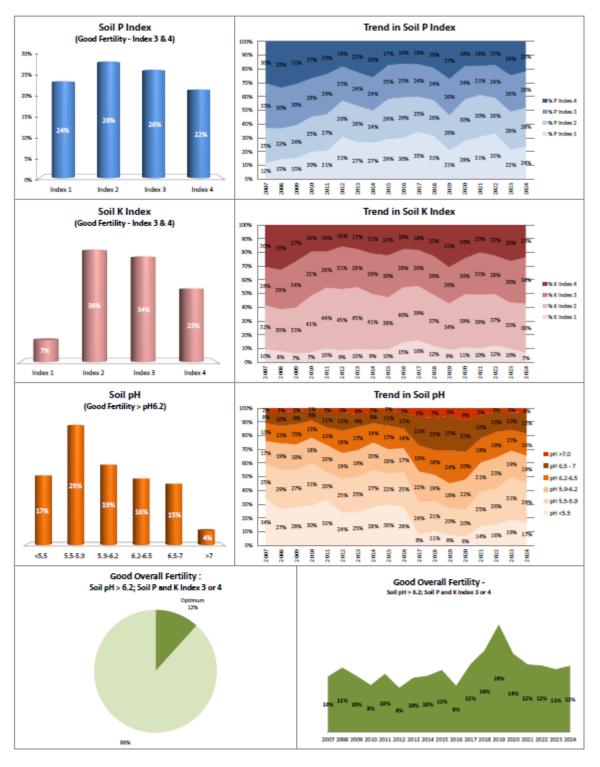


Drystock



Soil Analysis Status and Trends

County Year Enterprise Number of Samples Cork 2024 Drystock 3,467

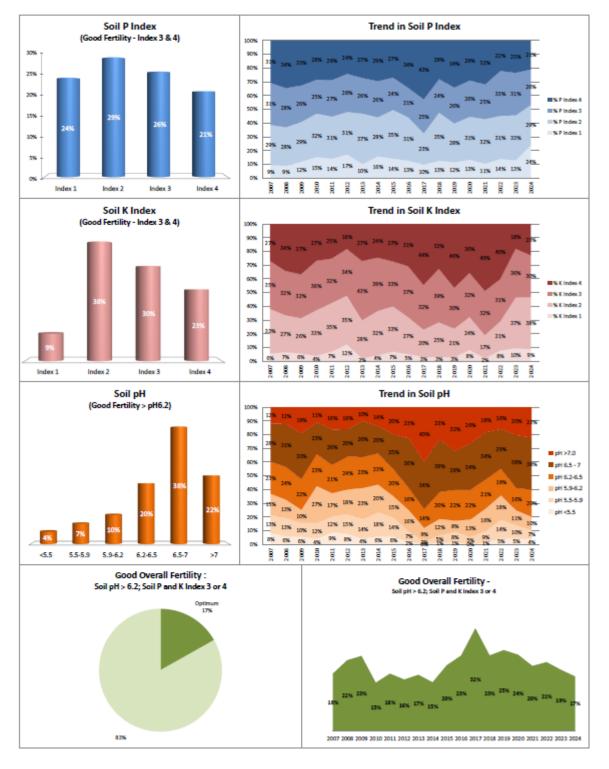


Tillage



Soil Analysis Status and Trends

County Year Enterprise Number of Samples Cork 2024 Tillage 521



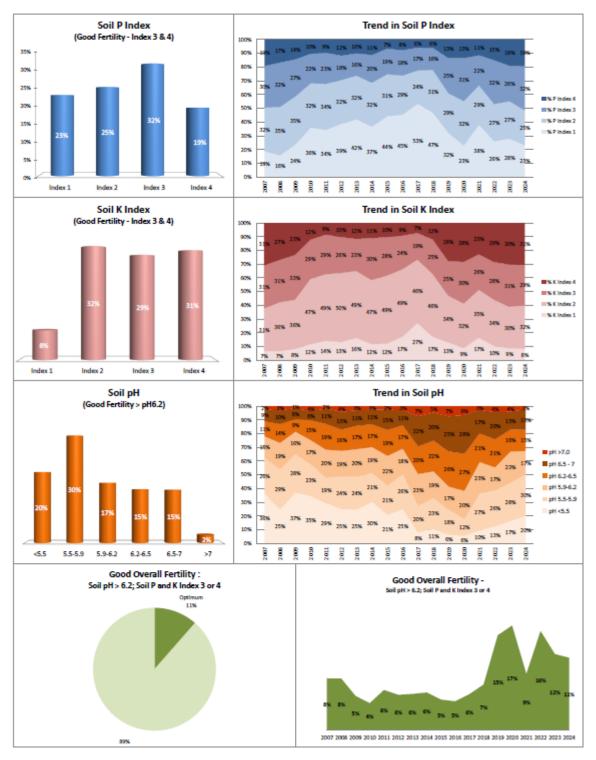
Donegal soil fertility results 2024

All enterprises



Soil Analysis Status and Trends

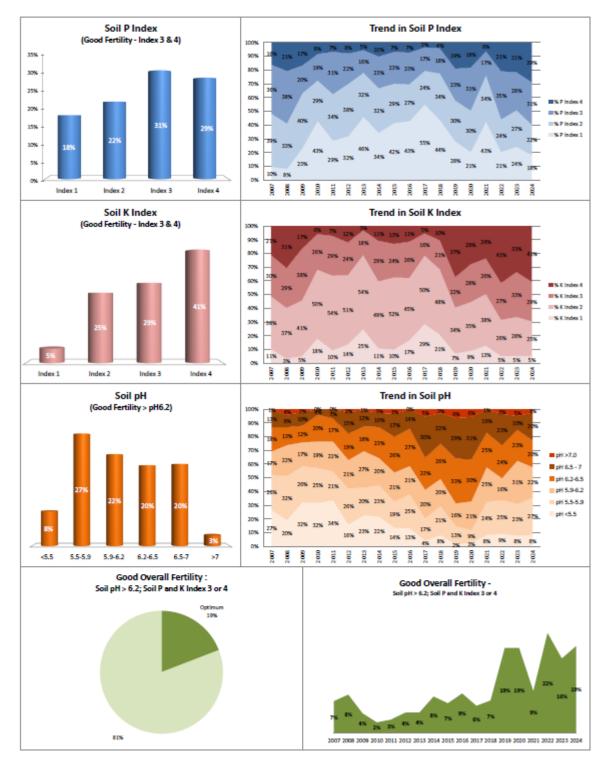
County Year Enterprise Number of Samples Donegal 2024 All Farms 1,730





County Year Enterprise Number of Samples

Donegal 2024 Dairy oles 340



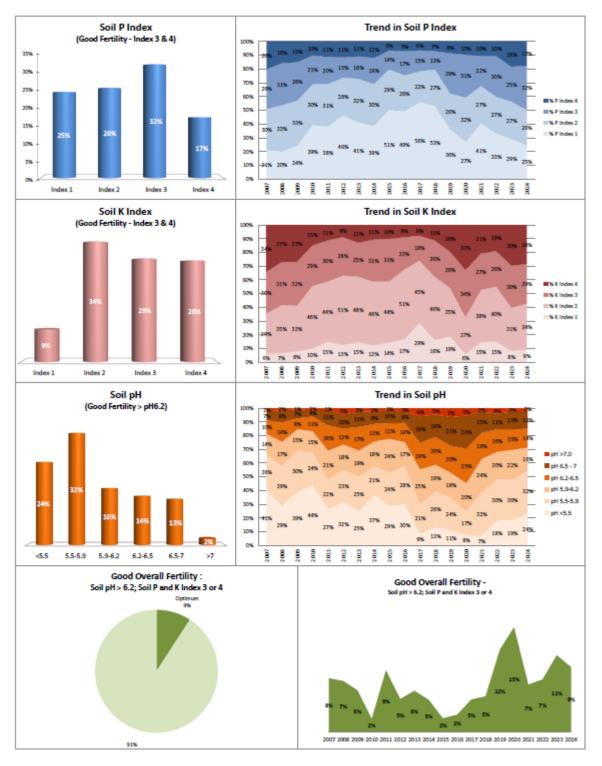
Drystock



Soil Analysis Status and Trends

County Year Enterprise Number of Samples

Donegal 2024 Drystock 1,356



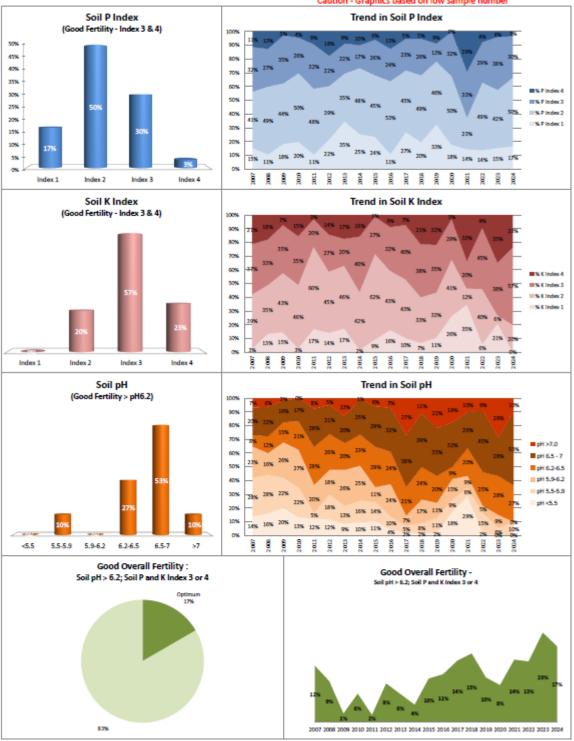
Tillage



Soil Analysis Status and Trends

County Year Enterprise Number of Samples Donegal 2024 Tillage 30





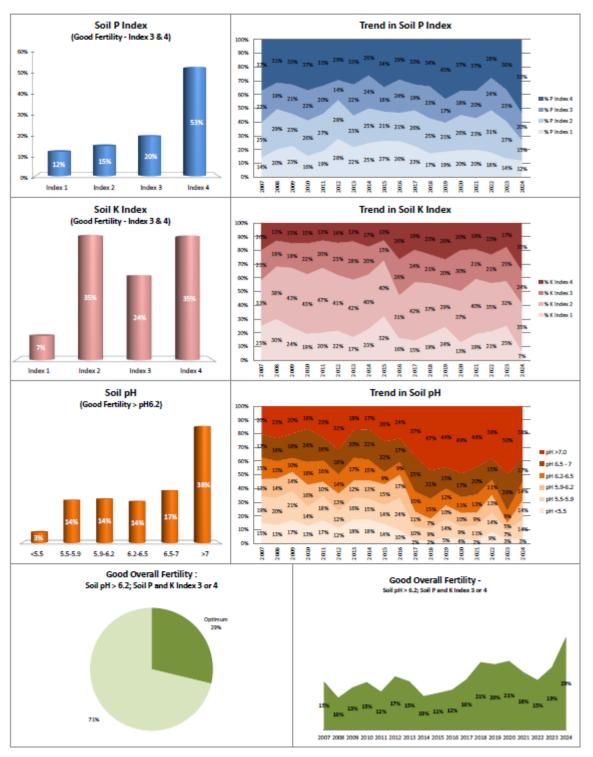
Dublin soil fertility results 2024

All enterprises



Soil Analysis Status and Trends

County Year Enterprise Number of Samples Dublin 2024 All Farms 487



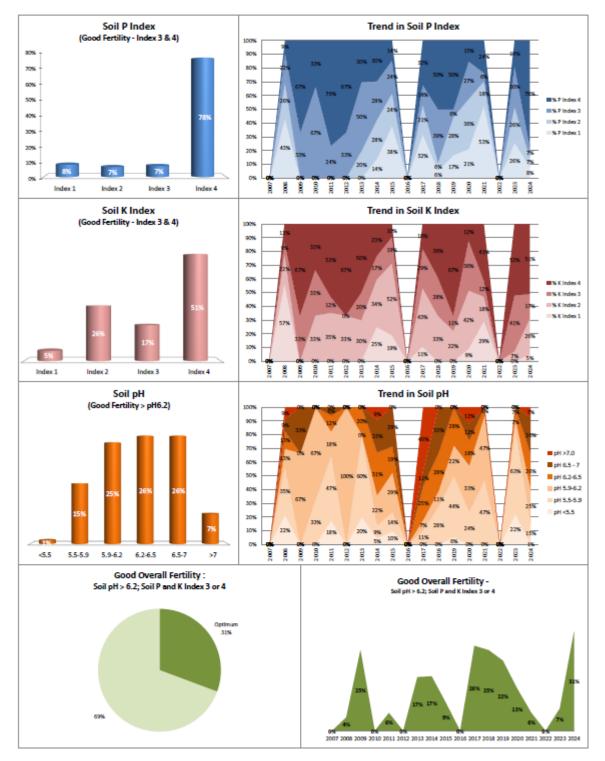
Dairy



Soil Analysis Status and Trends

County Year Enterprise Number of Samples

Dublin 2024 Dairy 121

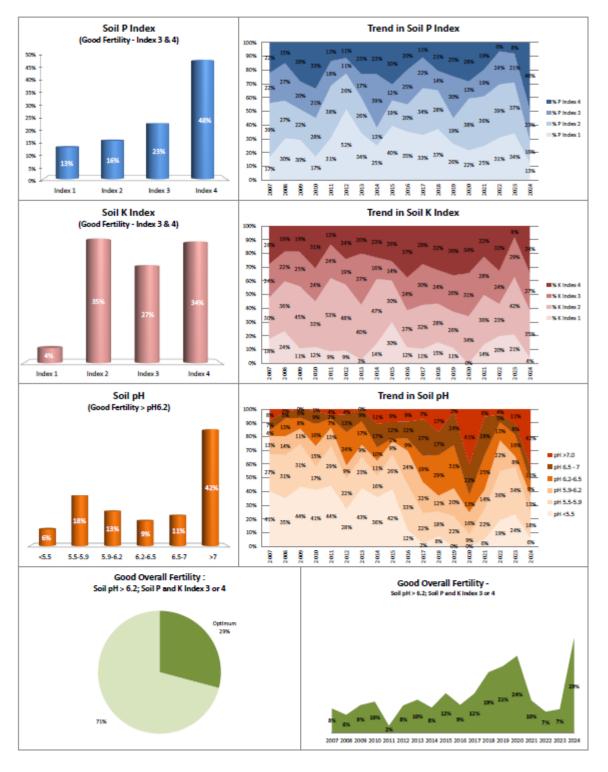


Drystock



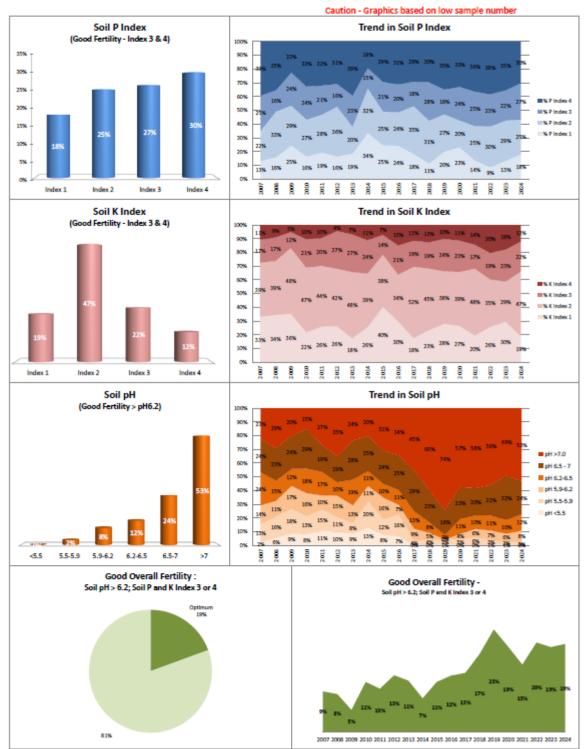
Soil Analysis Status and Trends

County Year Enterprise Number of Samples Dublin 2024 Drystock 260





County Year Enterprise Number of Samples Dublin 2024 Tillage 83



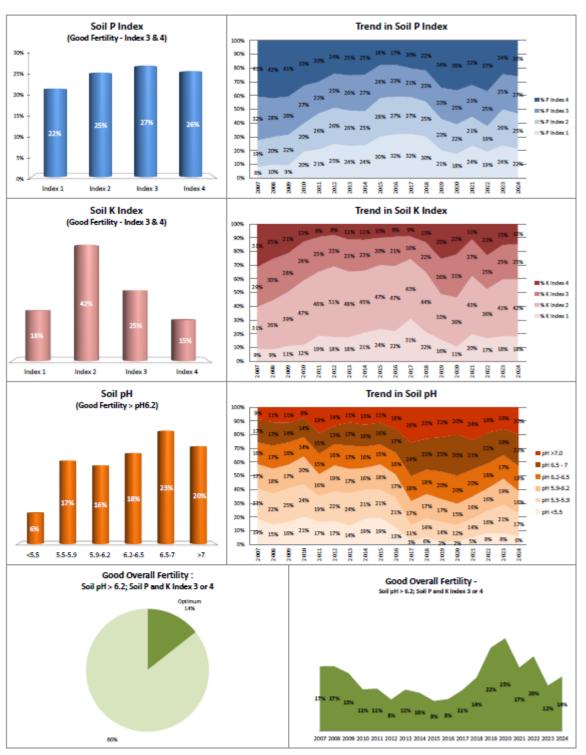
Galway soil fertility results 2024

All enterprises



Soil Analysis Status and Trends

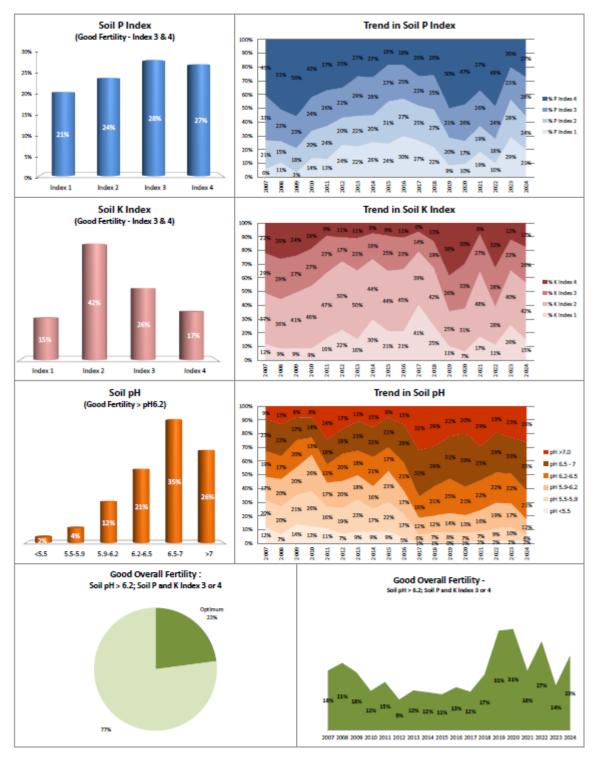
County Year Enterprise Number of Samples Galway 2024 All Farms 4,998





County Year Enterprise Number of Samples

Galway
2024
Dairy
881

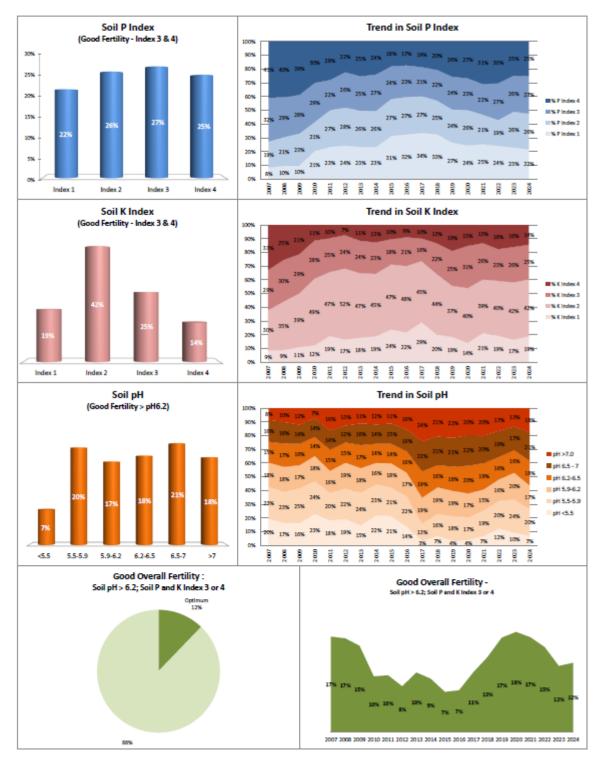


Drystock



Soil Analysis Status and Trends

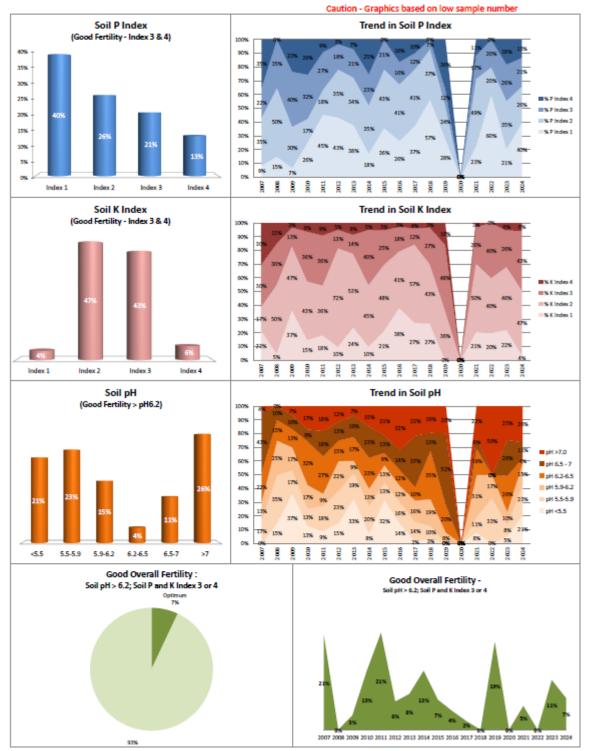
County Year Enterprise Number of Samples Galway 2024 Drystock 4,009





County Year Enterprise **Number of Samples**

Galway 2024 Tillage 53



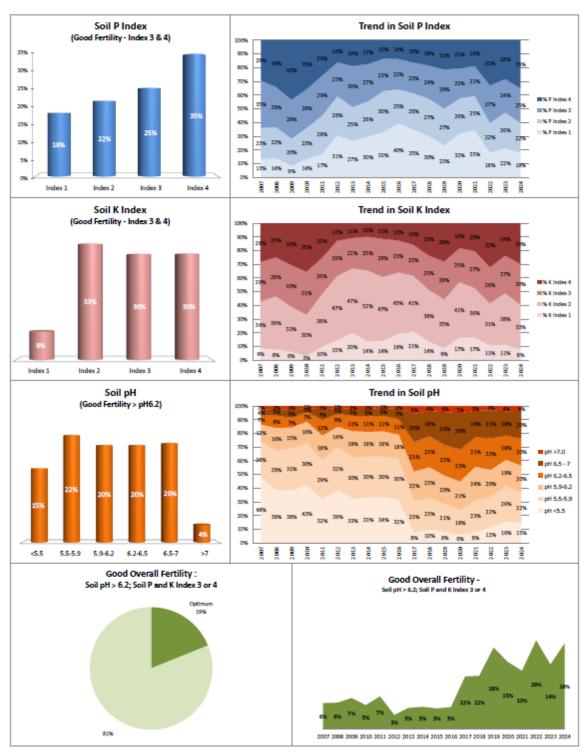
Kerry soil fertility results 2024

All enterprises



Soil Analysis Status and Trends

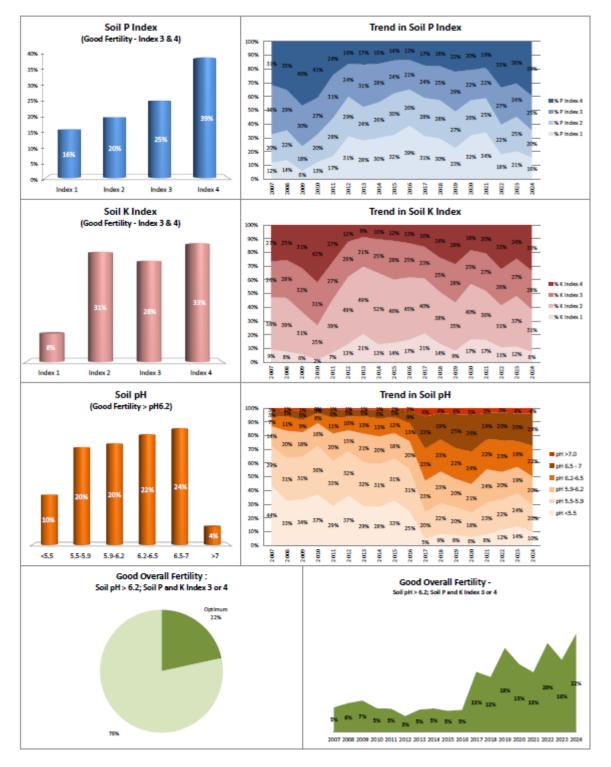
County Year Enterprise Number of Samples Xerry 2024 All Farms 2,606





County Year Enterprise

Kerry 2024 Dairy Number of Samples 1,938

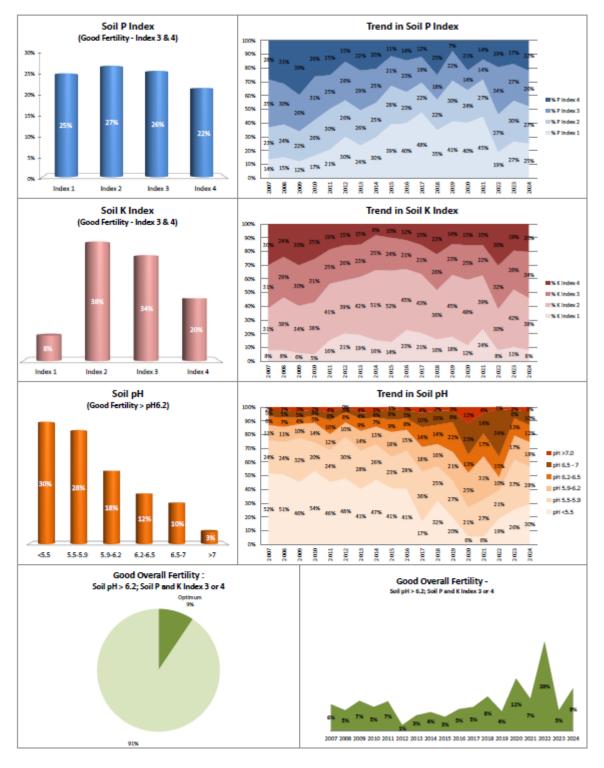


Drystock



Soil Analysis Status and Trends

County Year Enterprise Number of Samples Kerry 2024 Drystock 653



Tillage Insufficient data set available

Kildare soil fertility results 2024

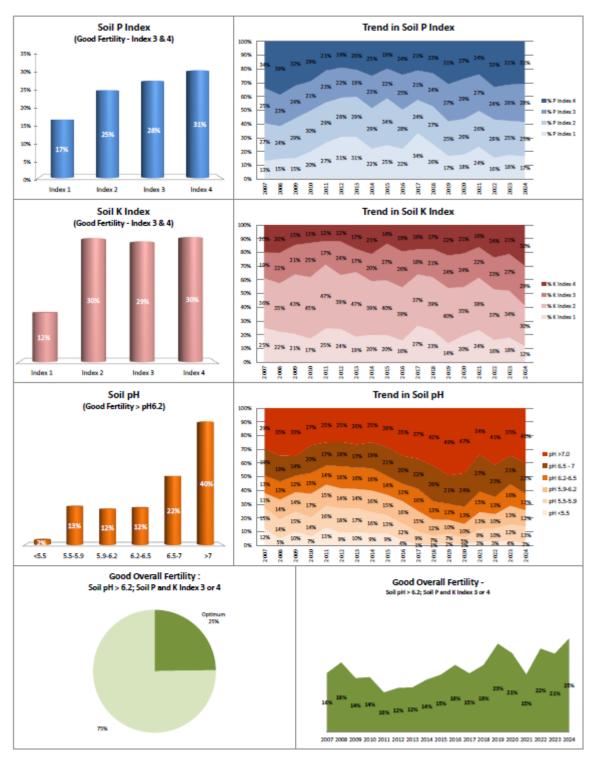
All enterprises



Soil Analysis Status and Trends

County Year Enterprise Number of Samples

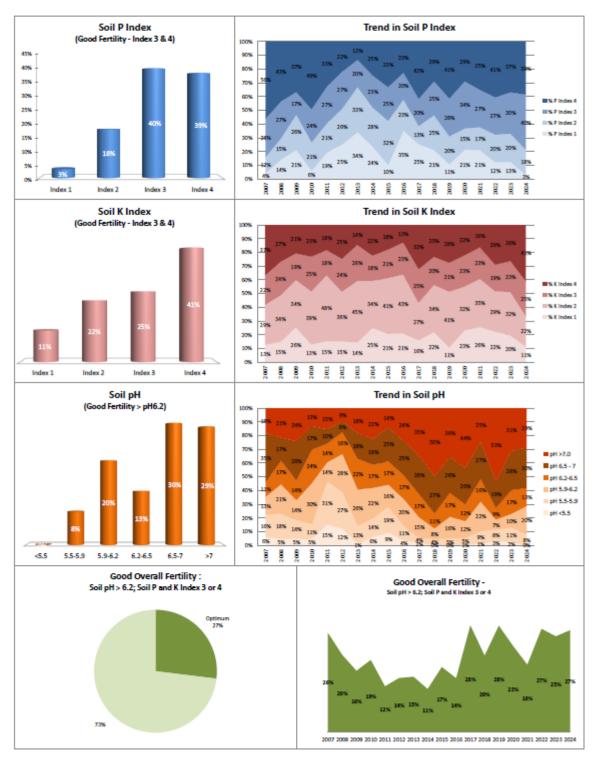
Kildare
2024
All Farms
1,063





County Year Enterprise Number of Samples

Kildare 2024 Dairy ples 122

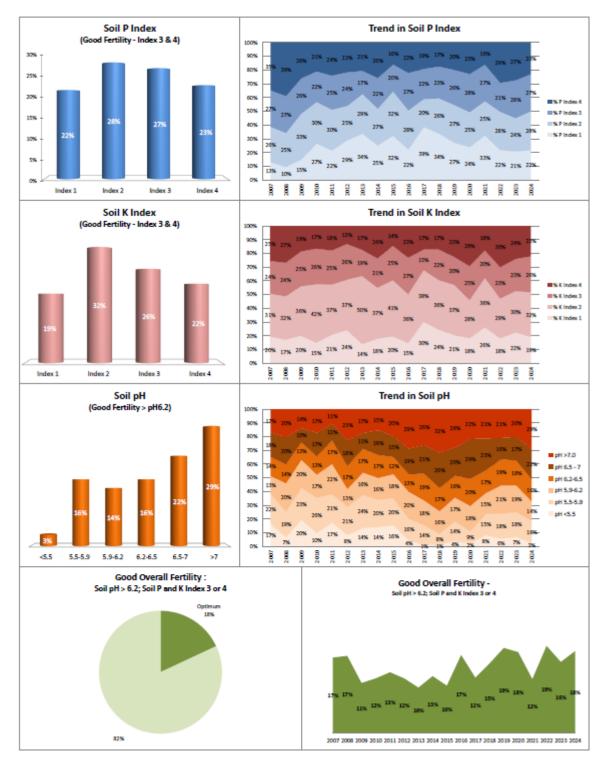


Drystock



Soil Analysis Status and Trends

County Year Enterprise Number of Samples Kildare 2024 Drystock 511

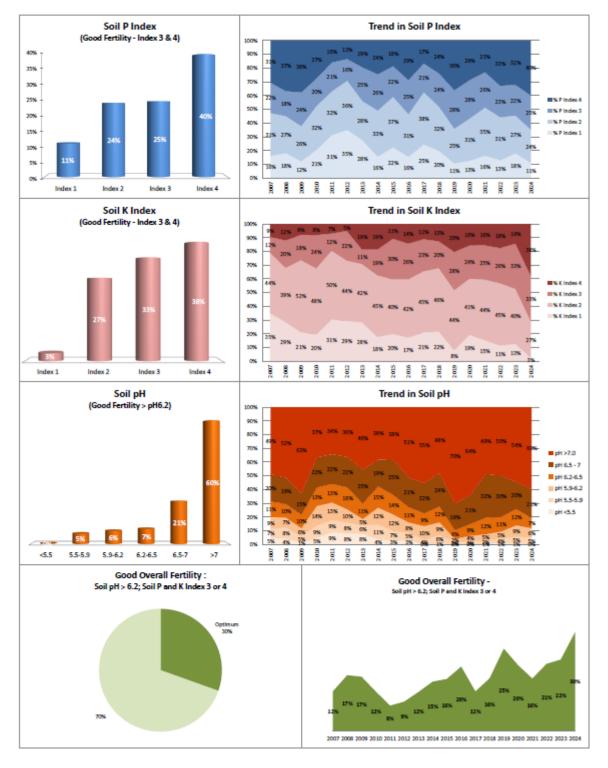


Tillage



Soil Analysis Status and Trends

County Year Enterprise Number of Samples Kildare 2024 Tillage 388



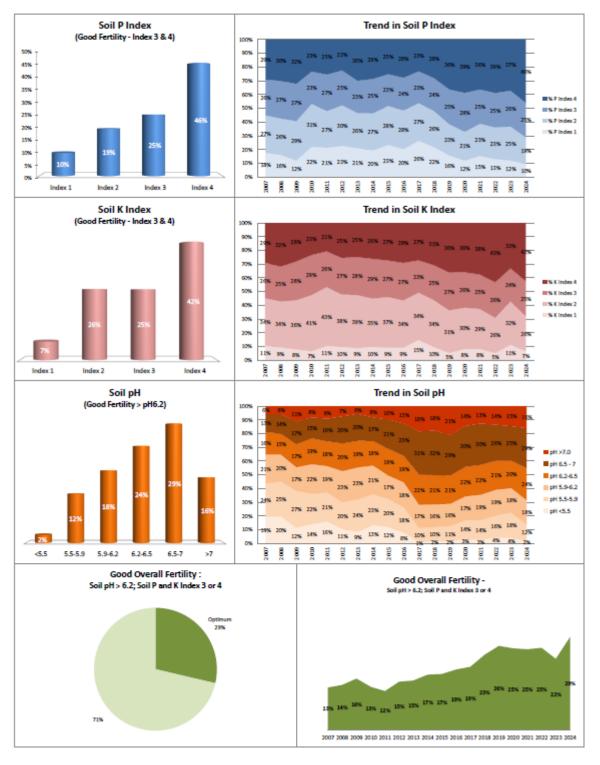
Kilkenny soil fertility results 2024

All enterprises



Soil Analysis Status and Trends

County Year Enterprise Number of Samples Kilkenny 2024 All Farms 3,031



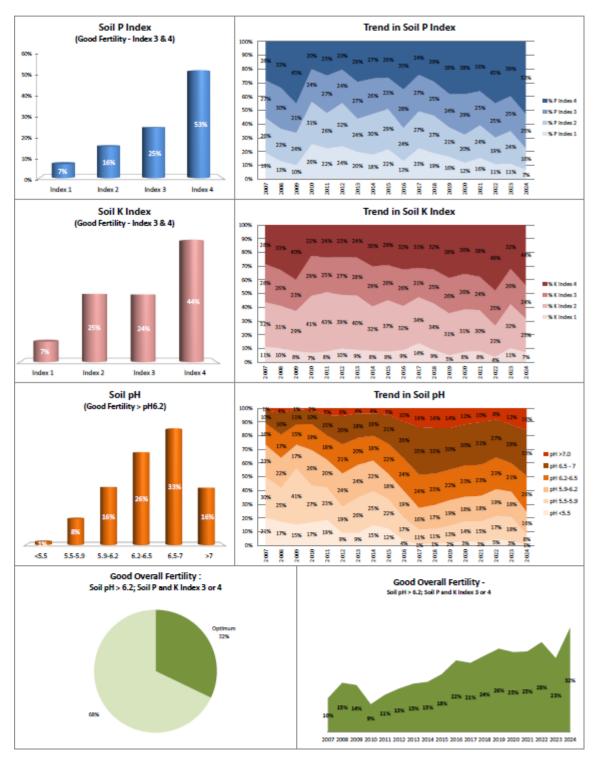
Dairy



Soil Analysis Status and Trends

County Year Enterprise Number of Samples

Kilkenny 2024 Dairy Samples 1,996

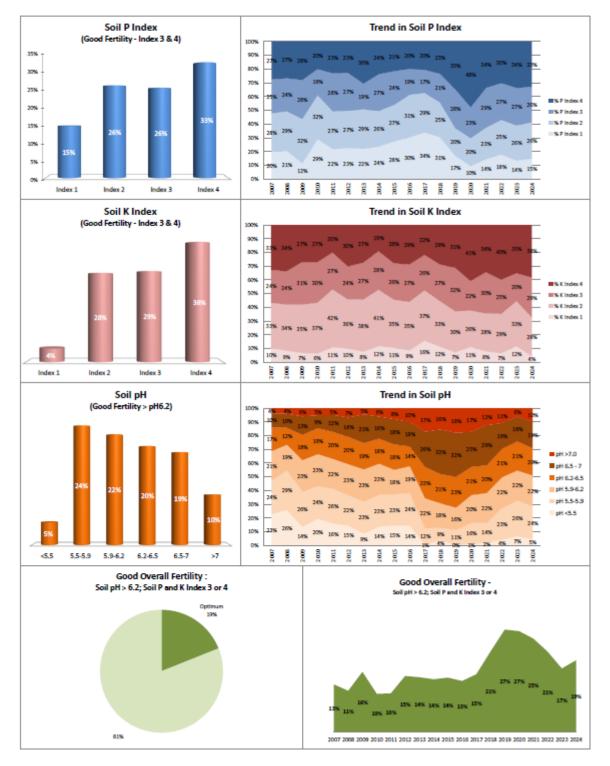


Drystock



Soil Analysis Status and Trends

County Year Enterprise Number of Samples Kilkenny 2024 Drystock 842



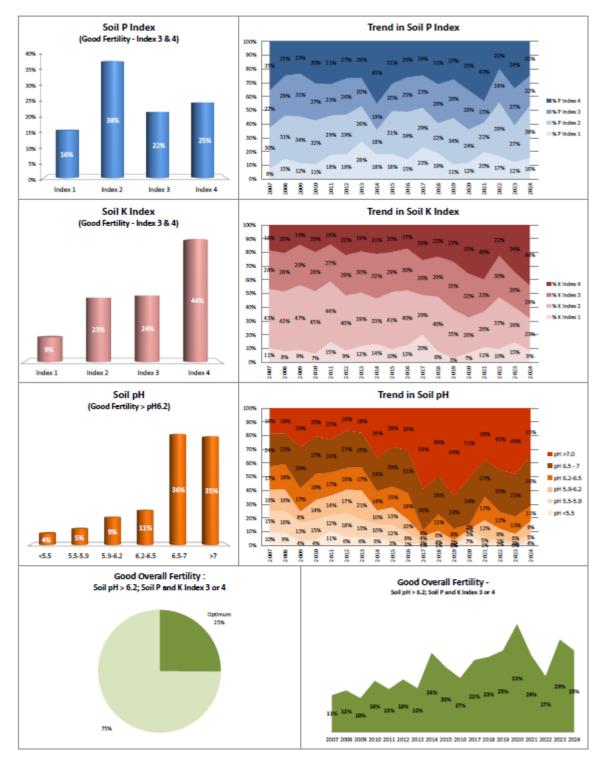
Tillage



Soil Analysis Status and Trends

County Year Enterprise Number of Samples

Kilkenny 2024 Tillage imples 134



Laois soil fertility results 2024

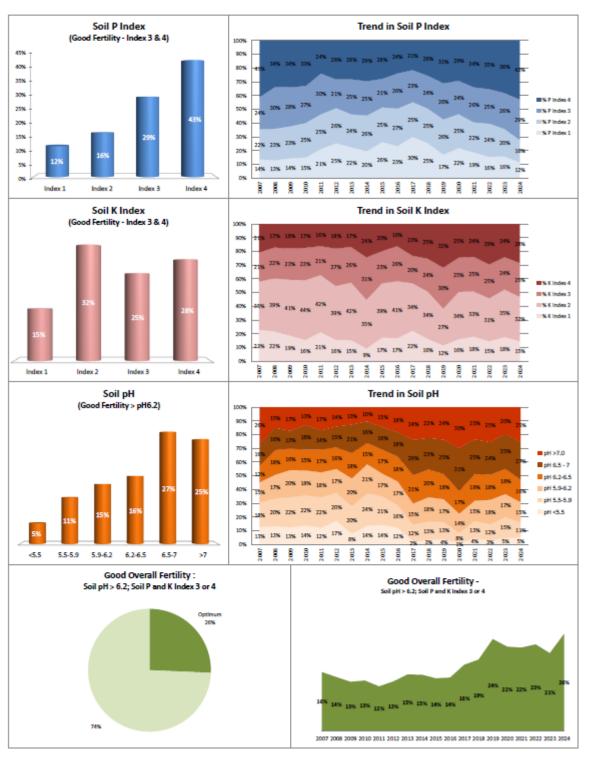
All enterprises



Soil Analysis Status and Trends

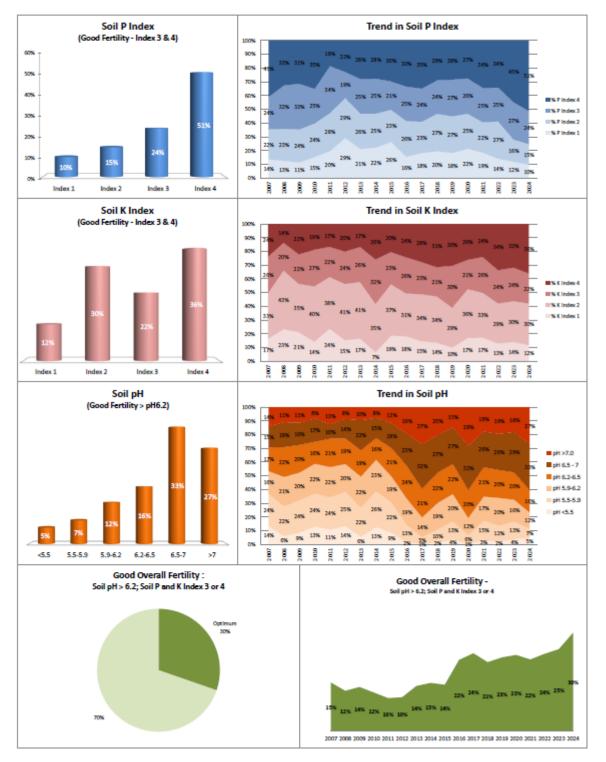
County Year Enterprise Number of Samples

Laois
2024
All Farms
1,468





County Year Enterprise Number of Samples Laois 2024 Dairy 736

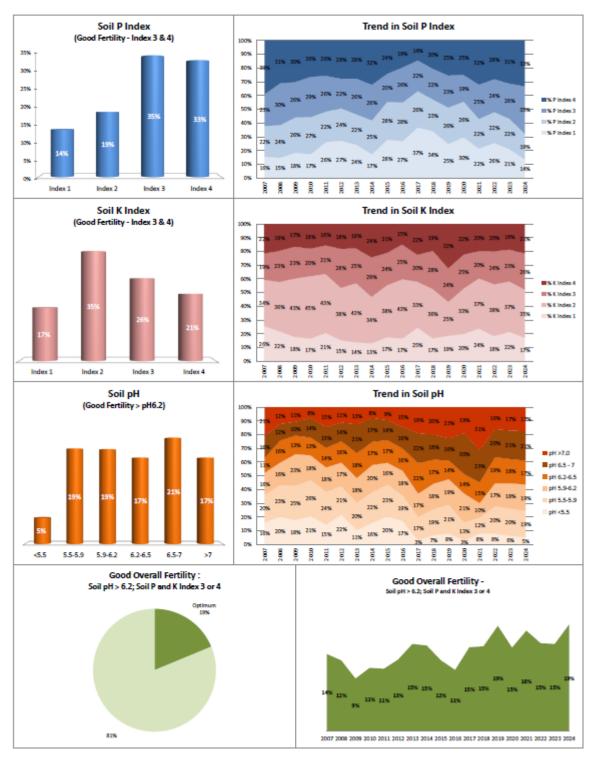


Drystock



Soil Analysis Status and Trends

County Year Enterprise Number of Samples Laois 2024 Drystock 602



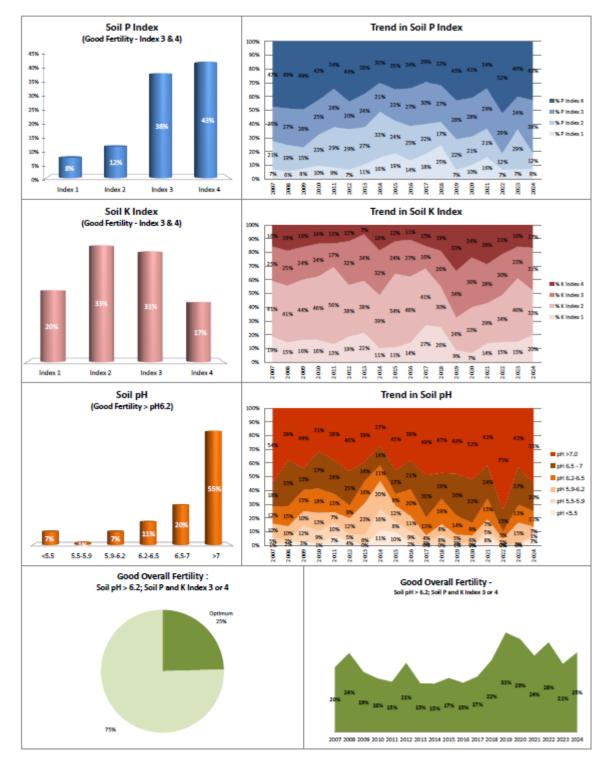
Tillage



Soil Analysis Status and Trends

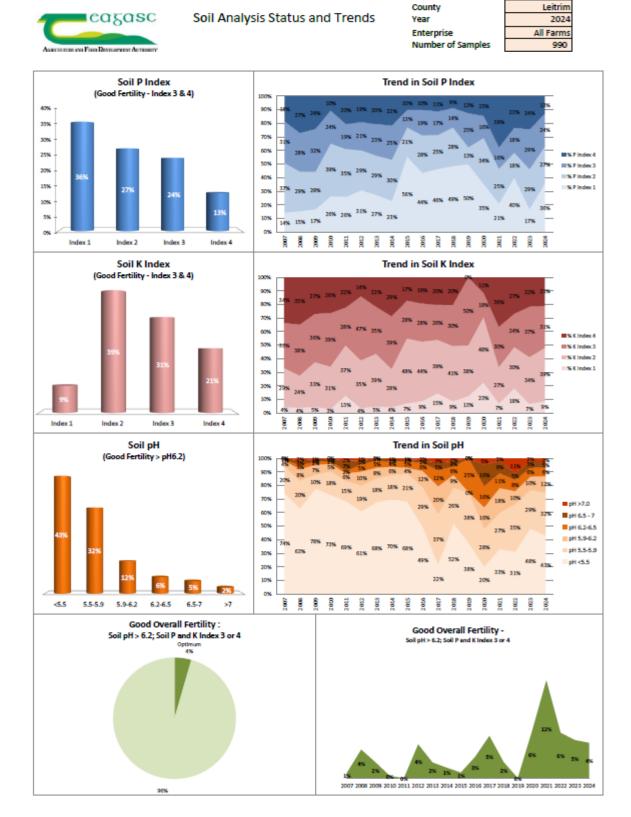
County Year Enterpri Number

	Laois
	2024
se	Tillage
of Samples	120



Leitrim soil fertility results 2024

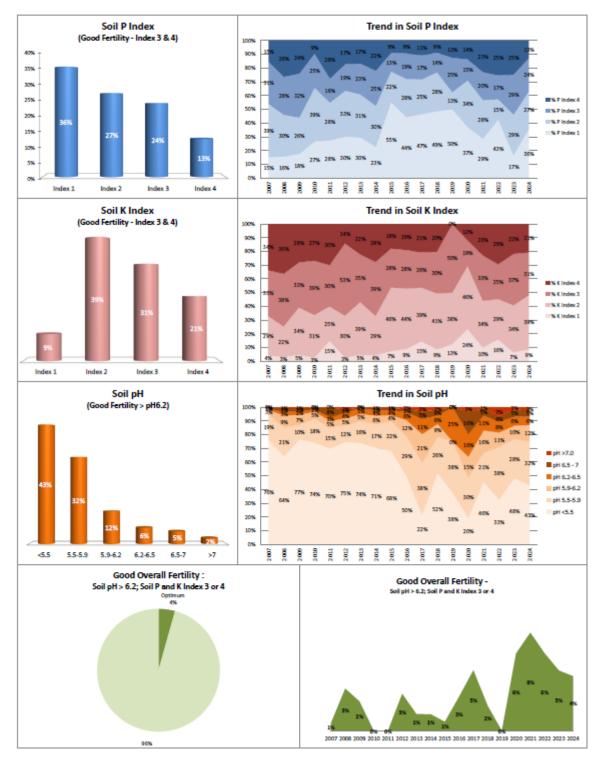
All enterprises



Dairy Insufficient data set available



County Year Enterprise Number of Samples Leitrim 2024 Drystock 986



Tillage
Insufficient data set available

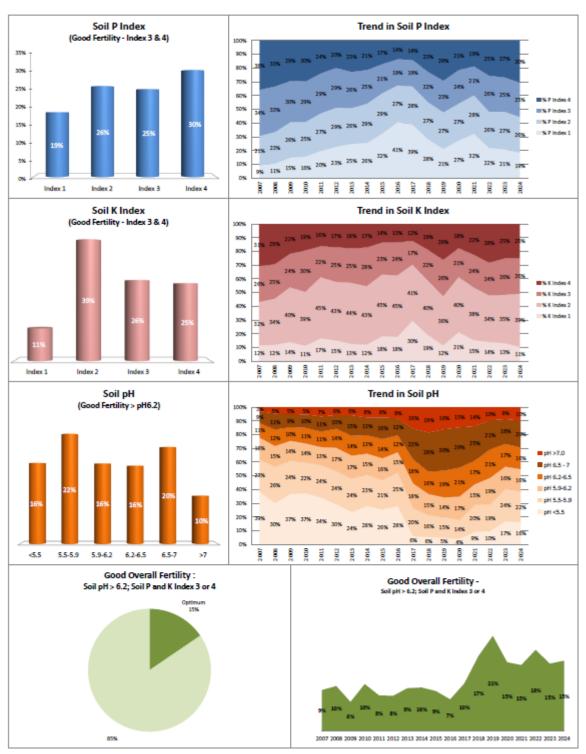
Limerick soil fertility results 2024

All enterprises



Soil Analysis Status and Trends

County Year Enterprise Number of Samples Limerick 2024 All Farms 4,437

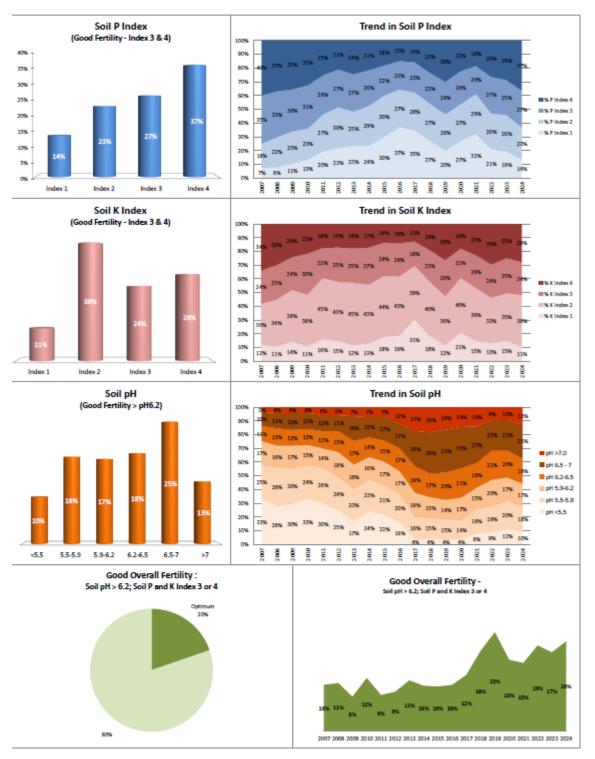


Dairy



Soil Analysis Status and Trends

County Year Enterprise Number of Samples Limerick 2024 Dairy 2,720

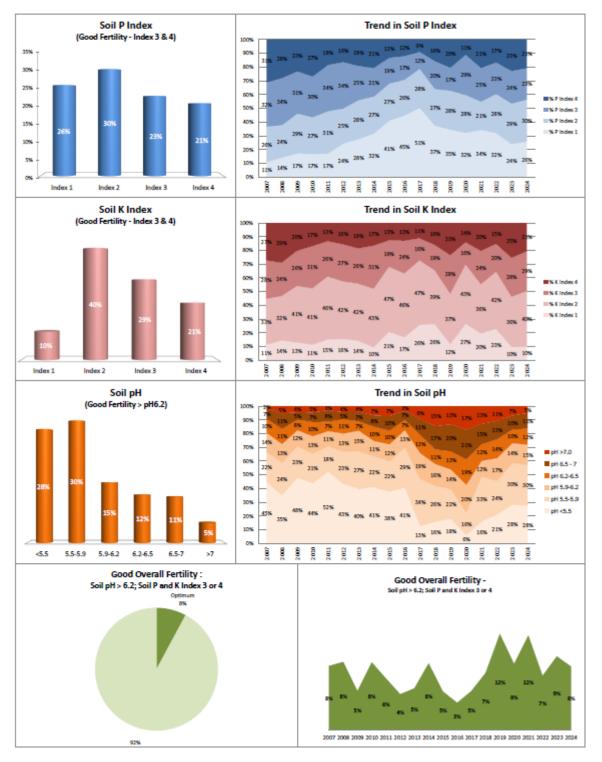


Drystock



Soil Analysis Status and Trends

County Year Enterprise Number of Samples



Tillage

Insufficient data set available

Longford soil fertility results 2024

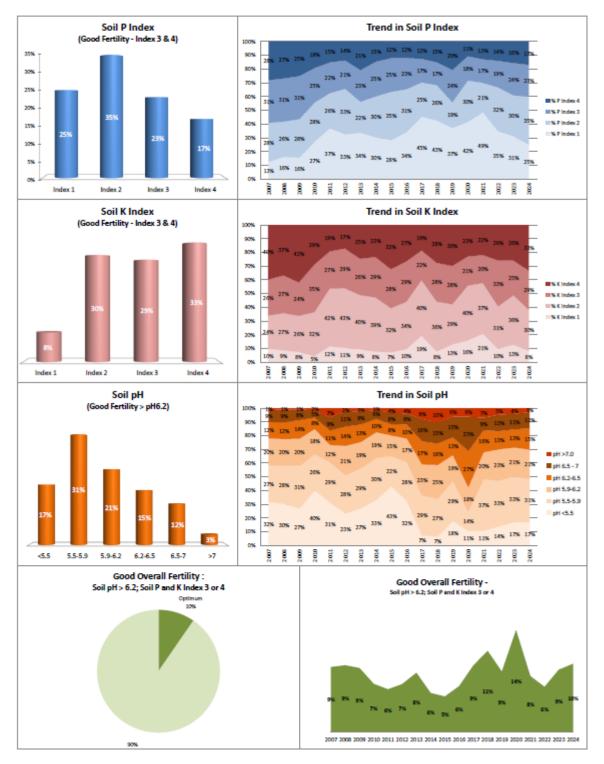
All enterprises



Soil Analysis Status and Trends

County Year Enterprise Number of Samples

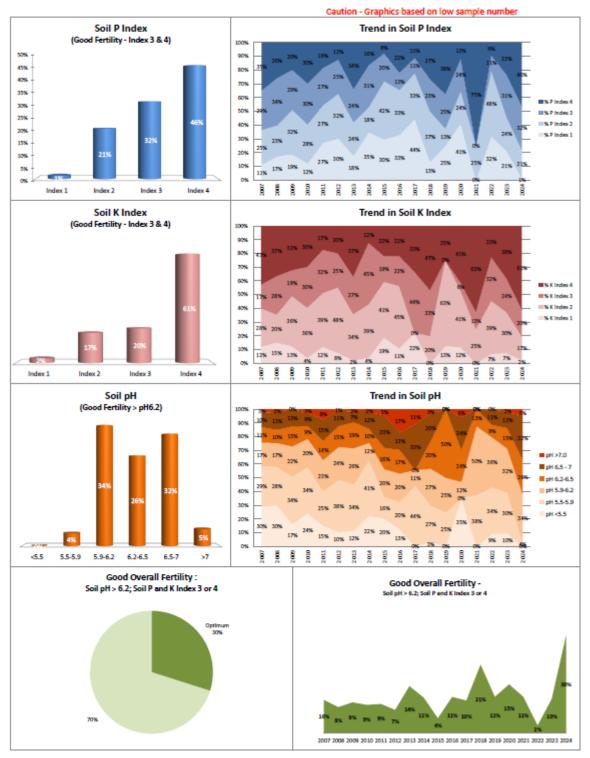
Longford 2024 All Farms 1,149





County Year Enterprise Number of Samples

Longford 2024 Dairy 82



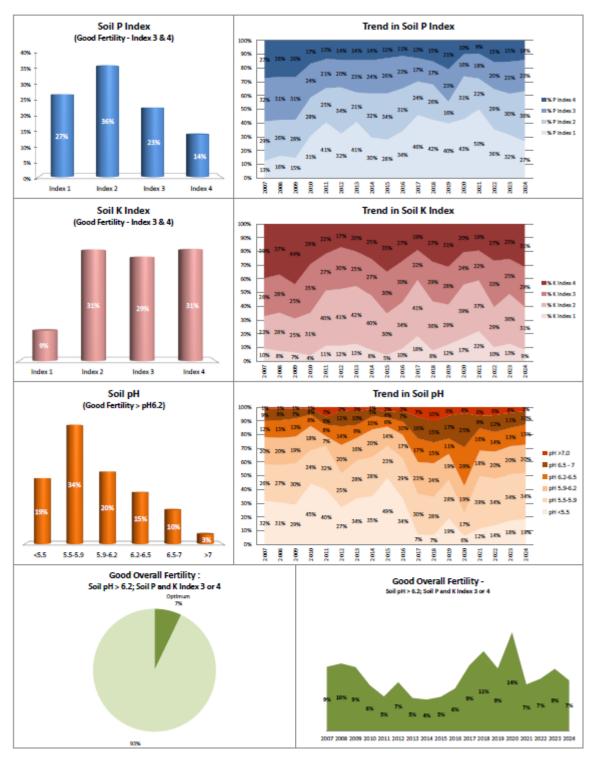
Drystock



Soil Analysis Status and Trends

County Year Enterprise Number of Samples

Longford 2024 Drystock 1,049



Tillage Insufficient data set available

Louth soil fertility results 2024

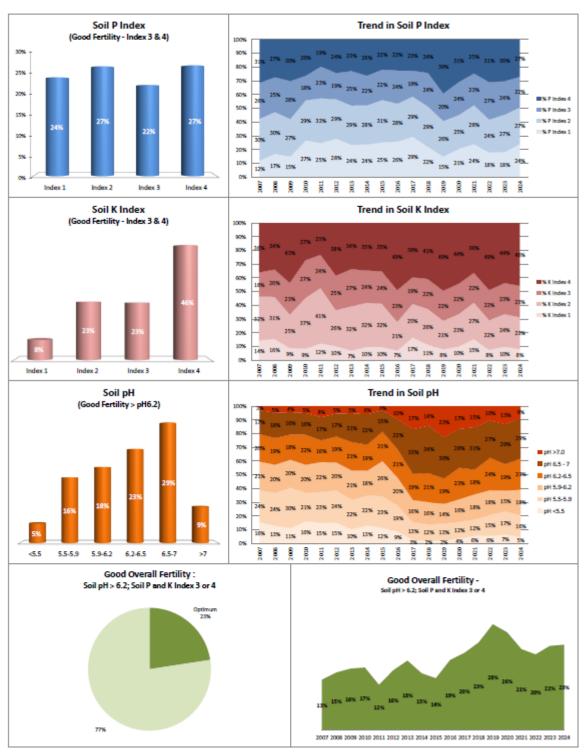
All enterprises



Soil Analysis Status and Trends

County Year Enterprise Number of Samples

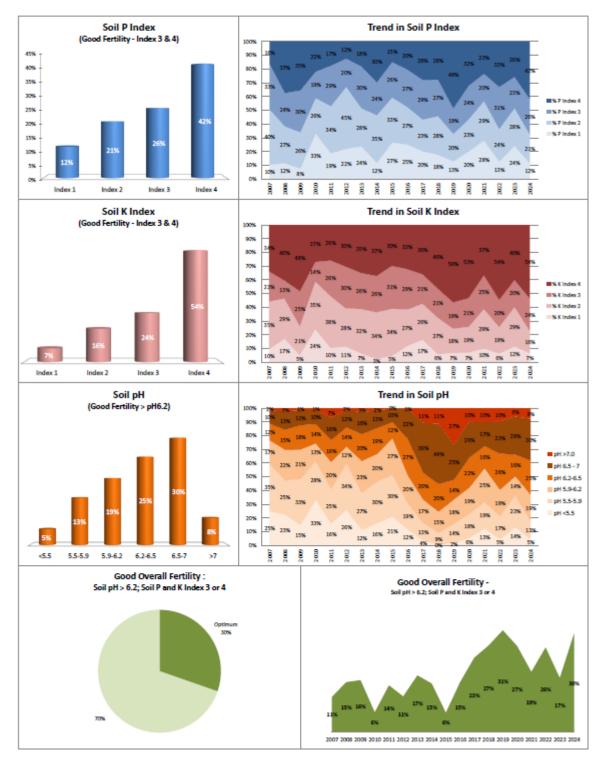
Louth
2024
All Farms
1,479





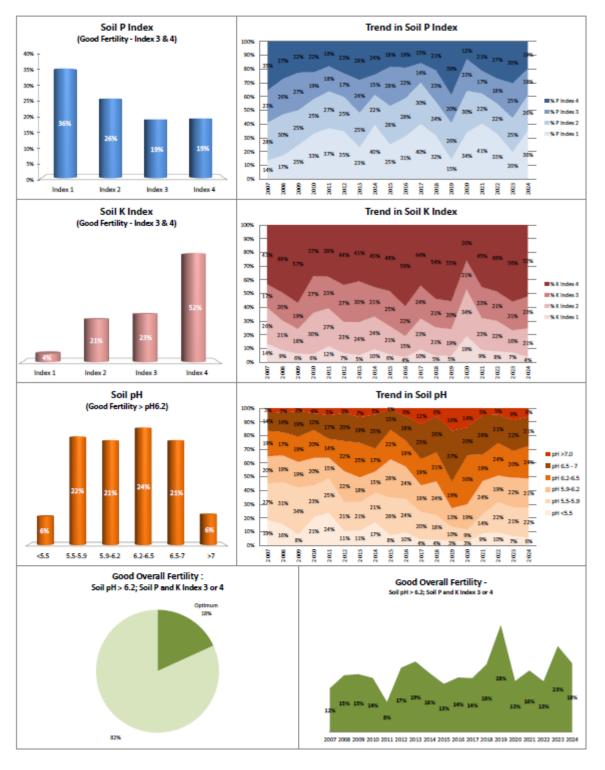
County Year Enterprise Number of Samples

Louth 2024 Dairy 525





County Year Enterprise Number of Samples Louth 2024 Drystock 560



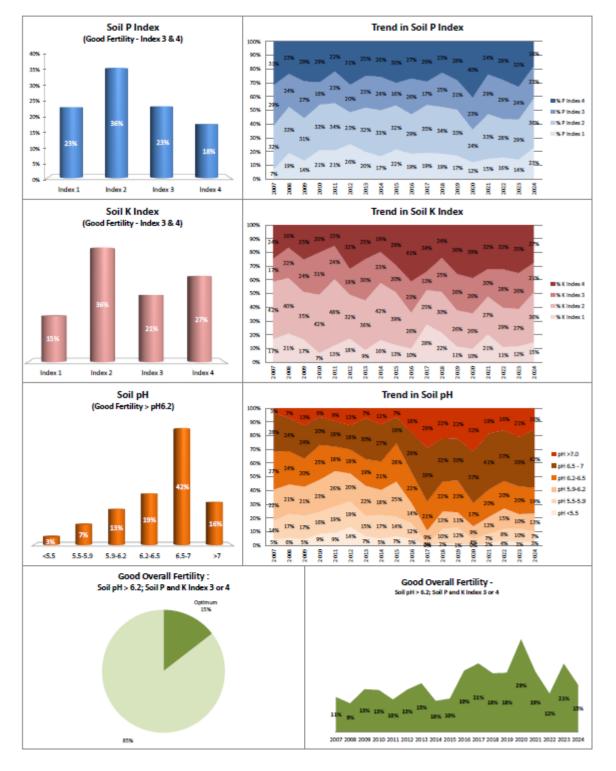
Tillage



Soil Analysis Status and Trends

County Year Enterprise **Number of Samples**

Louth 2024 Tillage



Mayo soil fertility results 2024

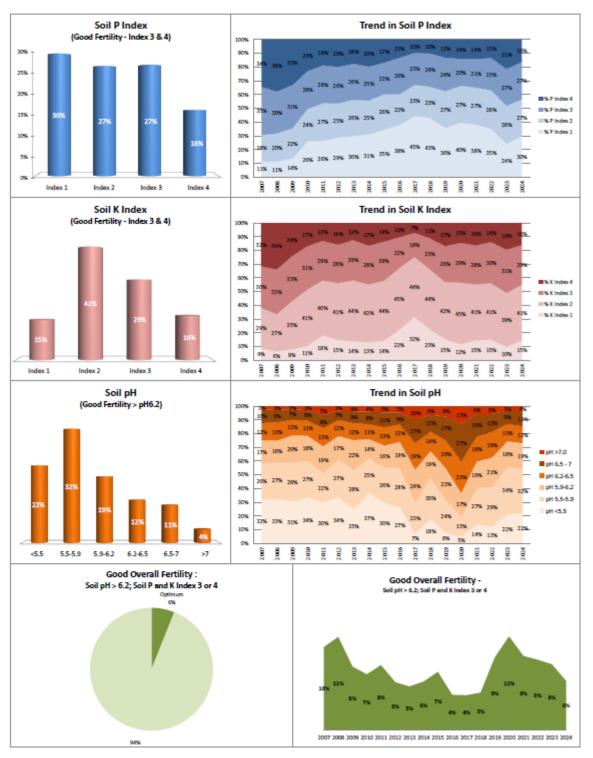
All enterprises



Soil Analysis Status and Trends

County Year Enterprise Number of Samples

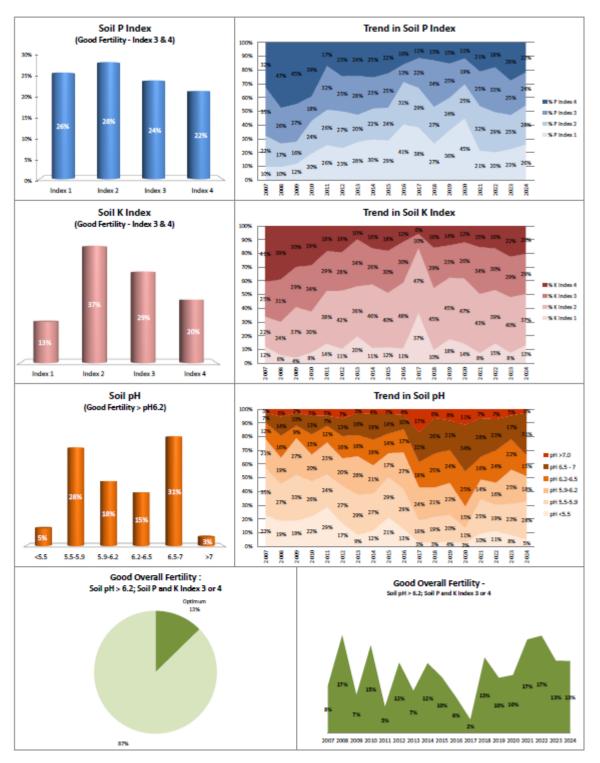
	Mayo
	2024
	All Farms
es	5,951





County Year Enterprise Number of Samples

Mayo 2024 Dairy 158



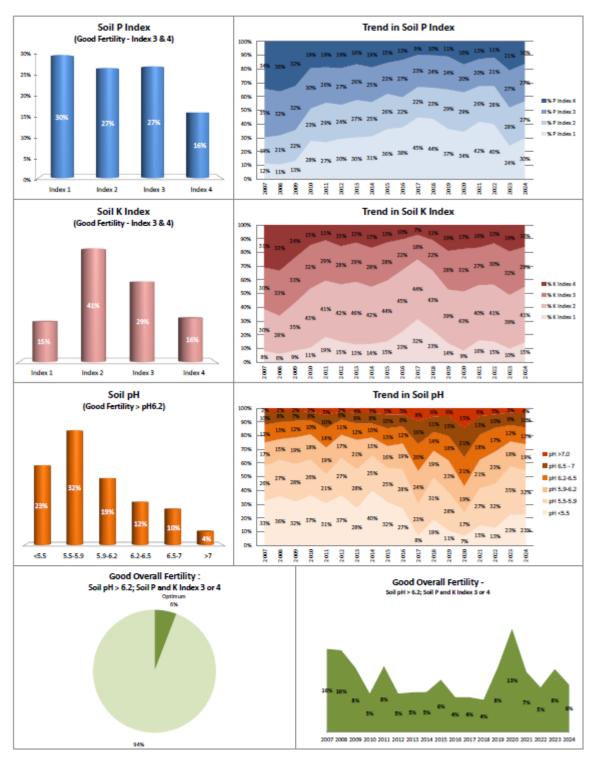
Drystock



Soil Analysis Status and Trends

County Year Enterprise Number of Samples

Mayo 2024 Drystock 5,771



Tillage Insufficient data set available

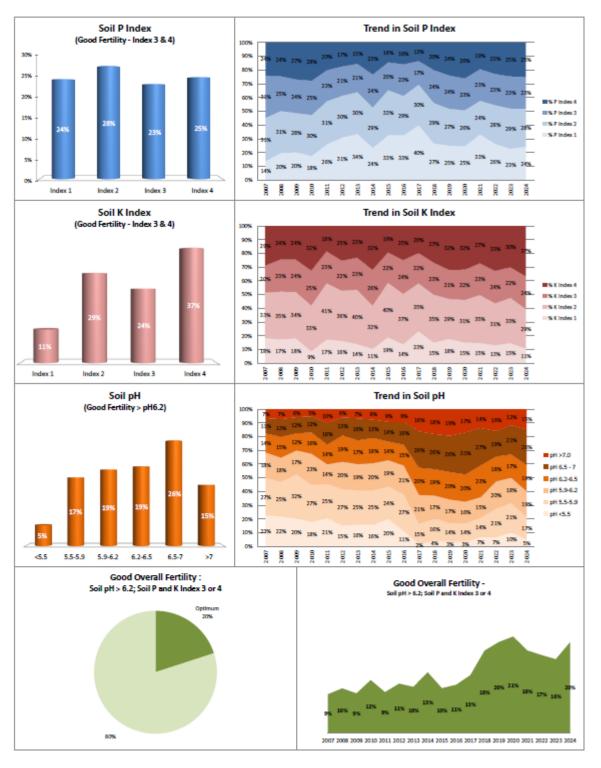
Meath soil fertility results 2024

All enterprises



Soil Analysis Status and Trends

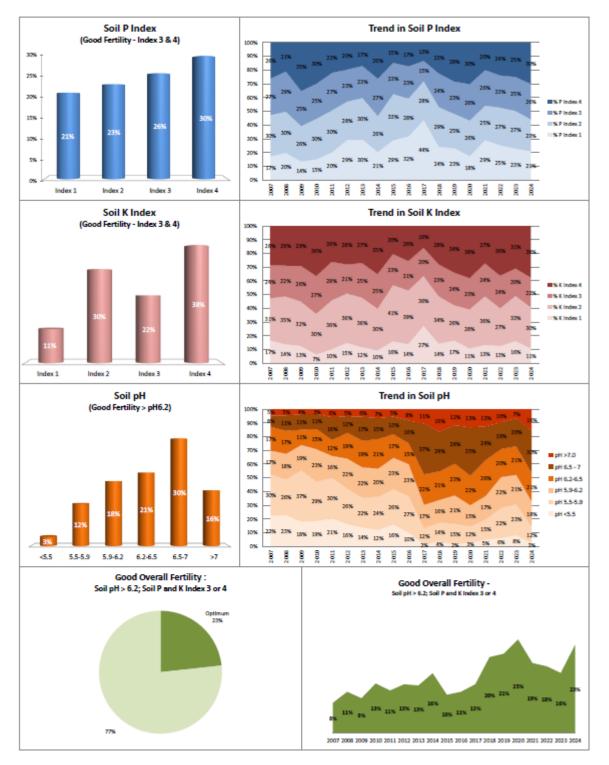
County Year Enterprise Number of Samples Meath 2024 All Farms 3,254





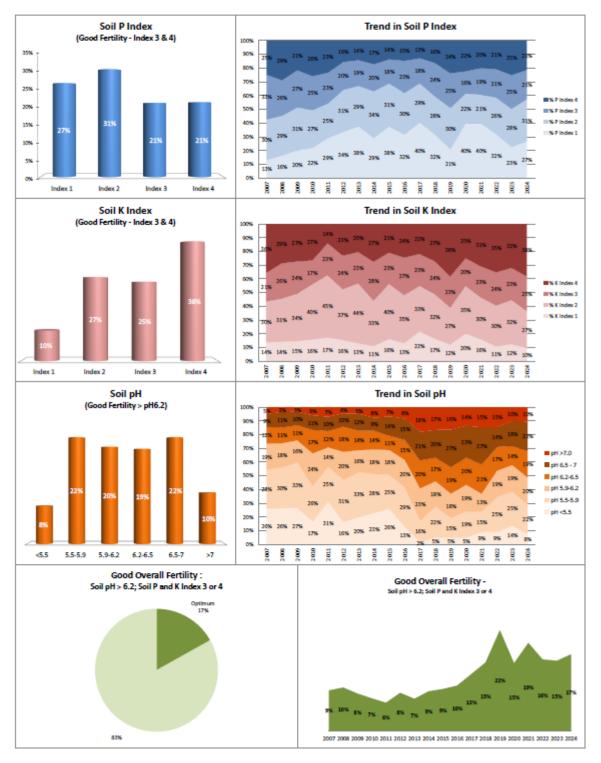
Count Year Enter Numb

ty	Meath
	2024
prise	Dain
ber of Samples	1,361





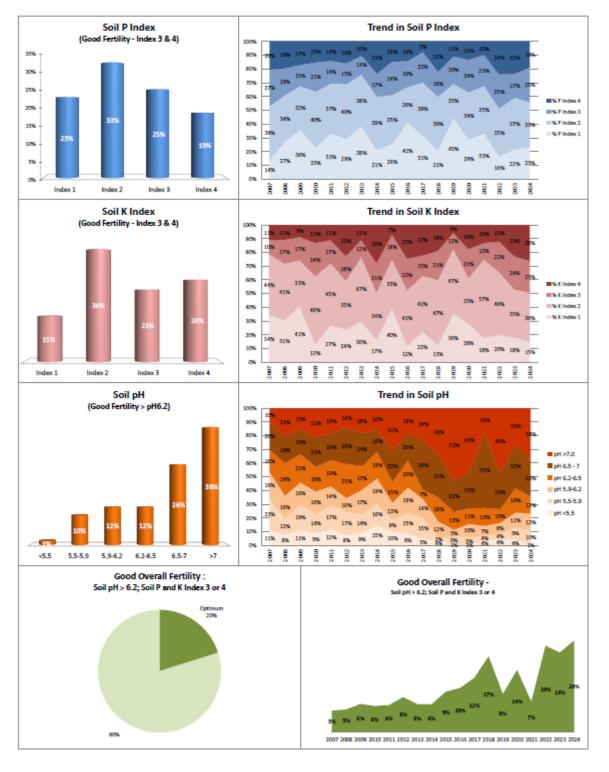
County Year Enterprise Number of Samples Meath 2024 Drystock 1,625





County Year Enterpr Numbe

1	Meath
	2024
rise	Tillage
er of Samples	225



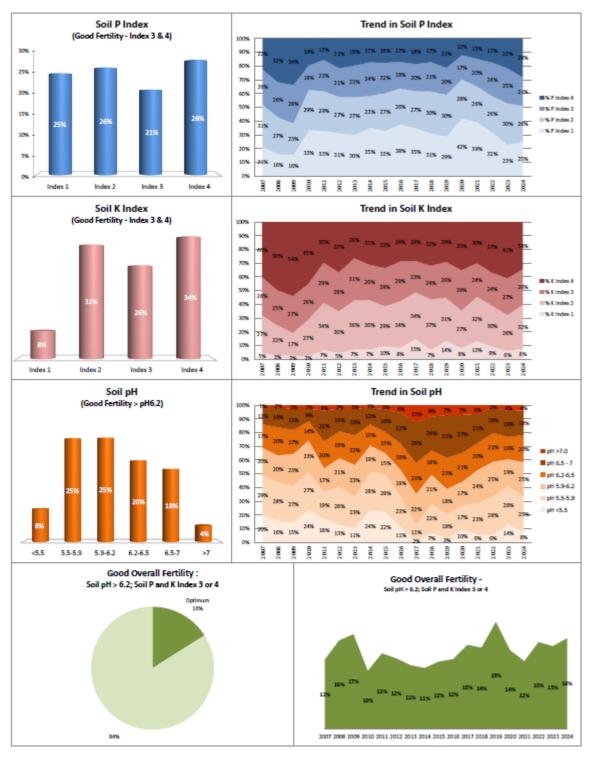
Monaghan soil fertility results 2024

All enterprises



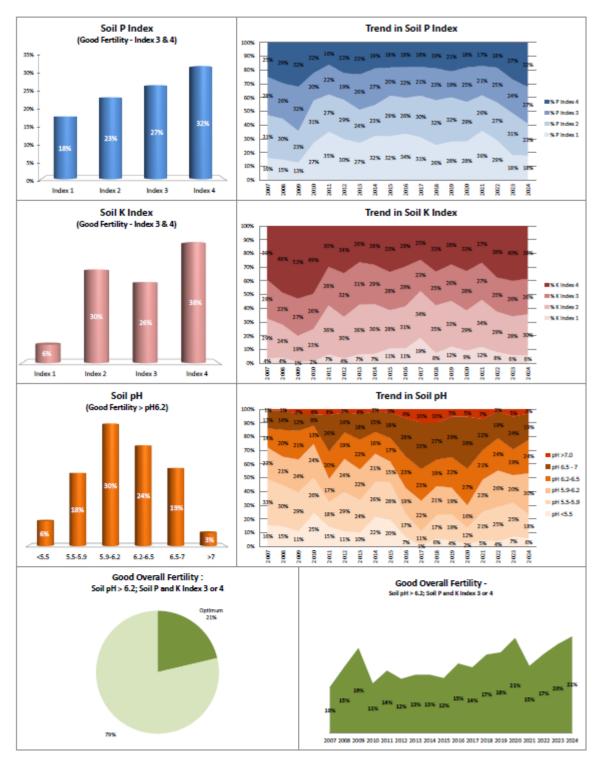
Soil Analysis Status and Trends

County Year Enterprise Number of Samples Monaghan 2024 All Farms 1,288





County Year Enterprise Number of Samples Monaghan 2024 Dairy 554



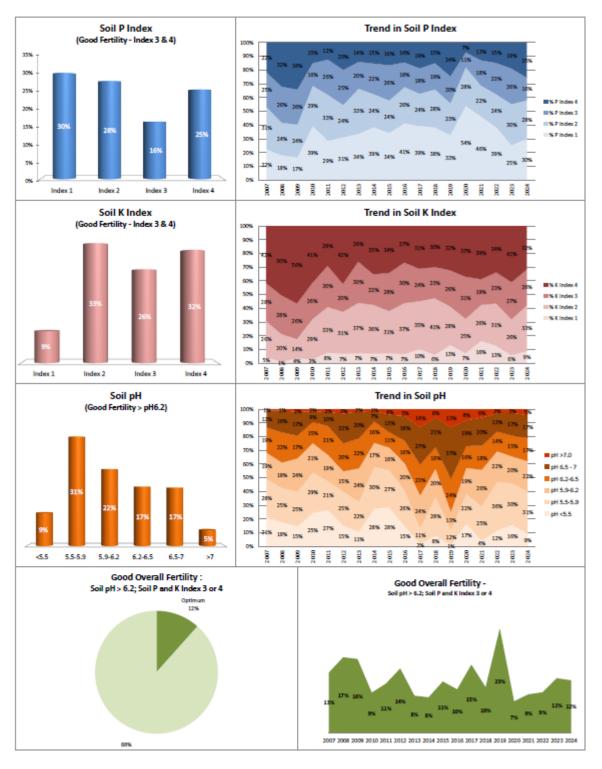
Drystock



Soil Analysis Status and Trends

County Year Enterprise Number of Samples

Monaghan 2024 Drystock ples 702



Tillage
Insufficient data set available

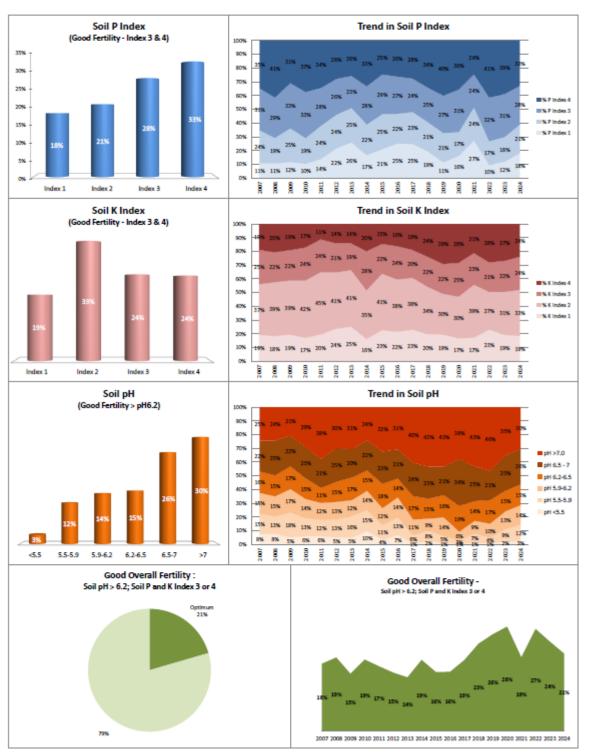
Offaly soil fertility results 2024

All enterprises



Soil Analysis Status and Trends

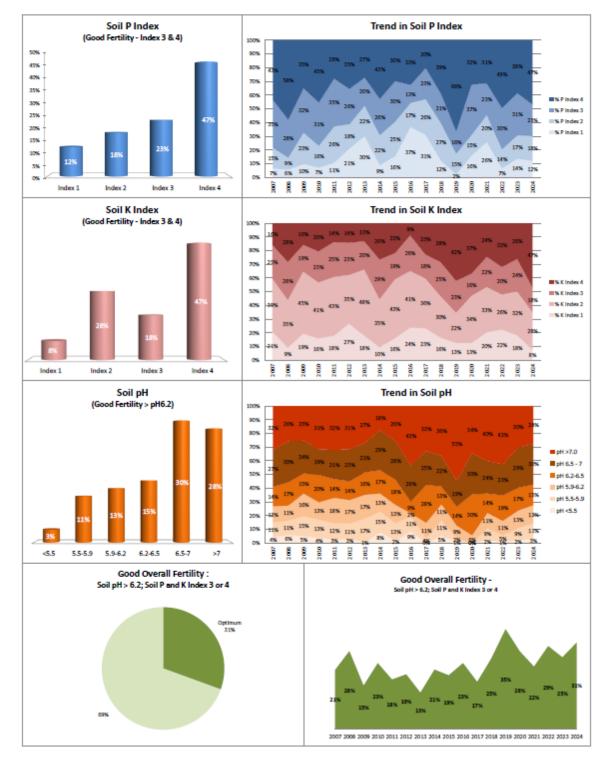
County Year Enterprise Number of Samples Offaly 2024 All Farms 1,446





County Year Enterprise **Number of Samples**

Offaly 2024 Dairy 156

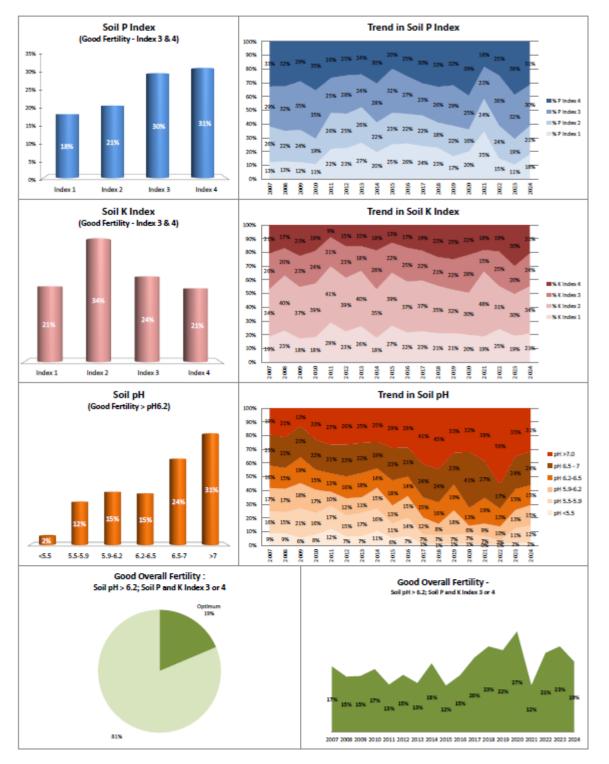


Drystock



Soil Analysis Status and Trends

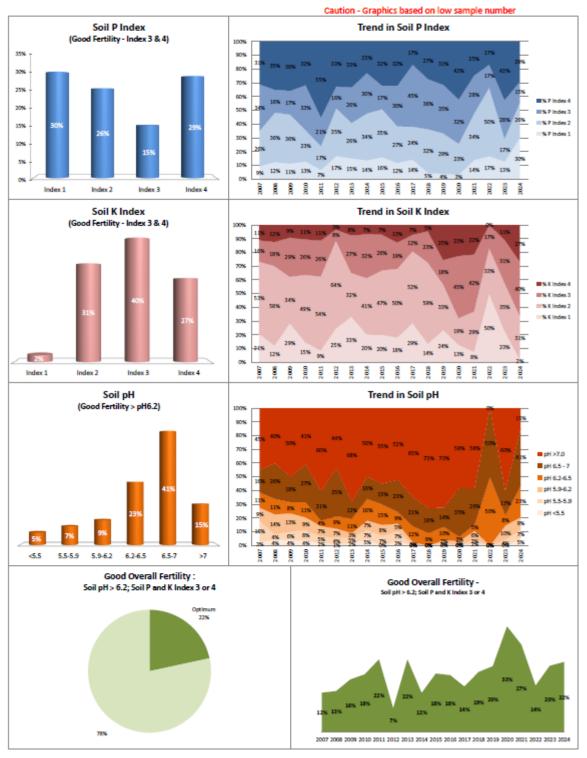
County Year Enterprise Number of Samples Offaly 2024 Drystock 1,201





County Year Enterpr Numbe

/	Offal
	202
rise	Tillage
er of Samples	86



Roscommon soil fertility results 2024

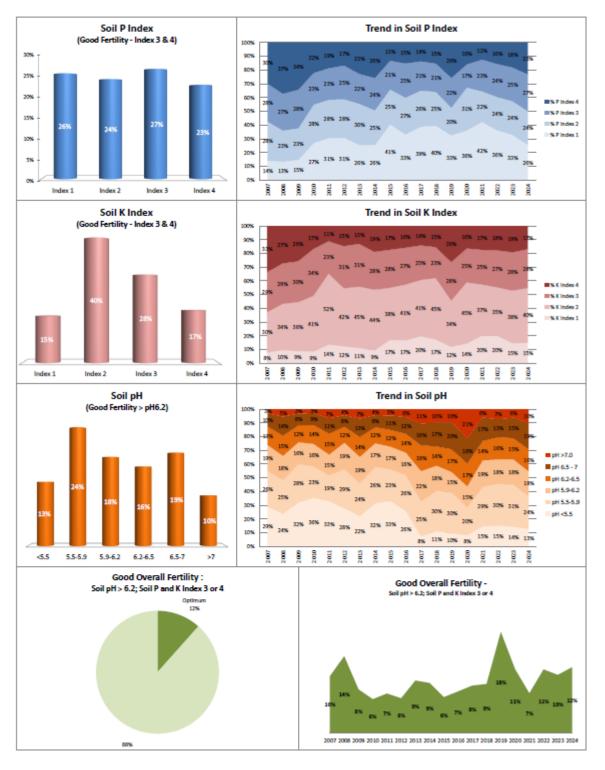
All enterprises



Soil Analysis Status and Trends

County Year Enterprise Number of Samples

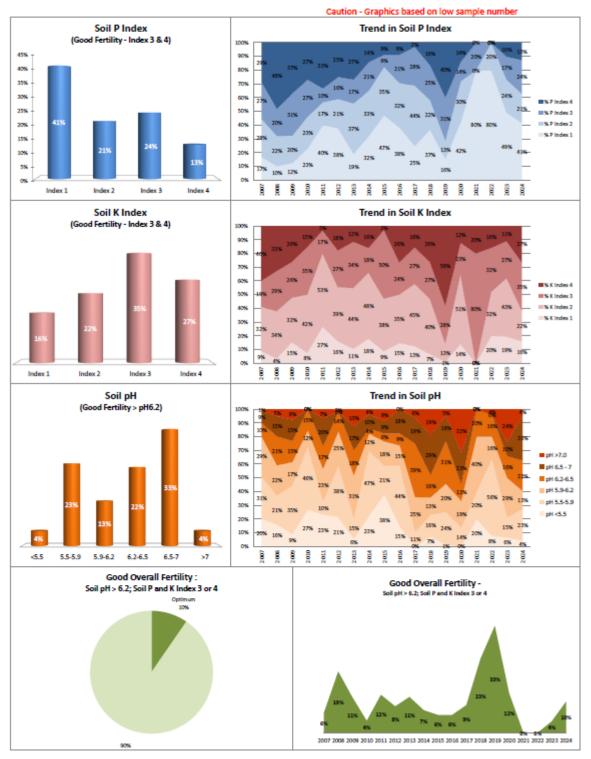
Roscommon
2024
All Farms
4,189





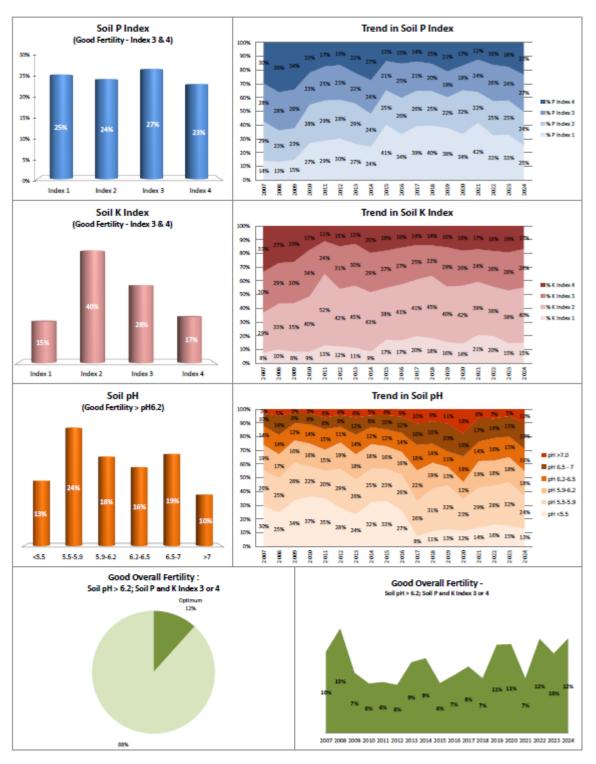
County Year Enterprise Number of Samples

Roscommon
2024
Dairy
94





County Year Enterprise Number of Samples Roscommon 2024 Drystock 4,086



Tillage Insufficient data set available

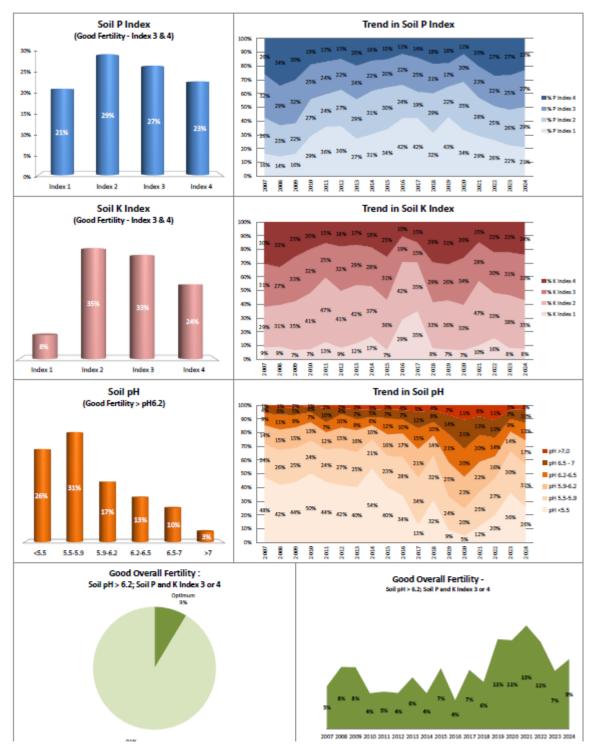
Sligo soil fertility results 2024

All enterprises



Soil Analysis Status and Trends

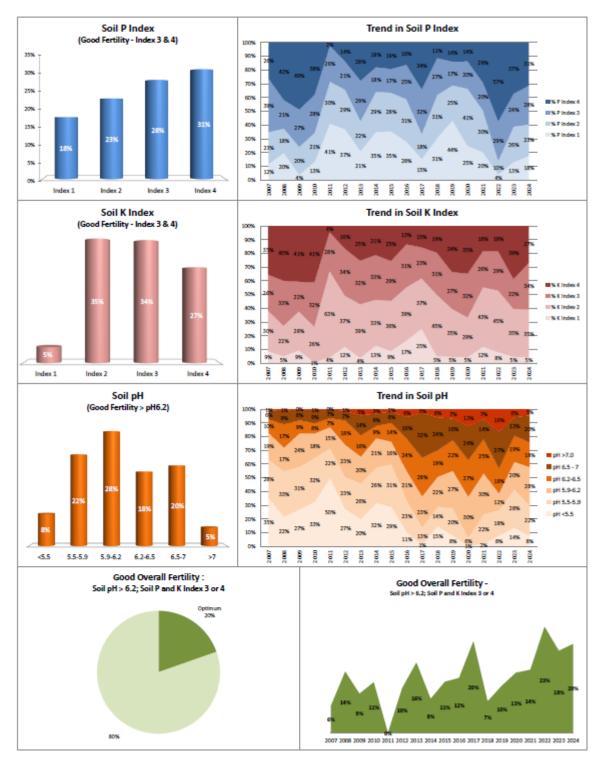
County Year Enterprise Number of Samples Sligo 2024 All Farms 2,257





County Year Enterprise Number of Samples

Sligo	
2024	
Dairy	
266	



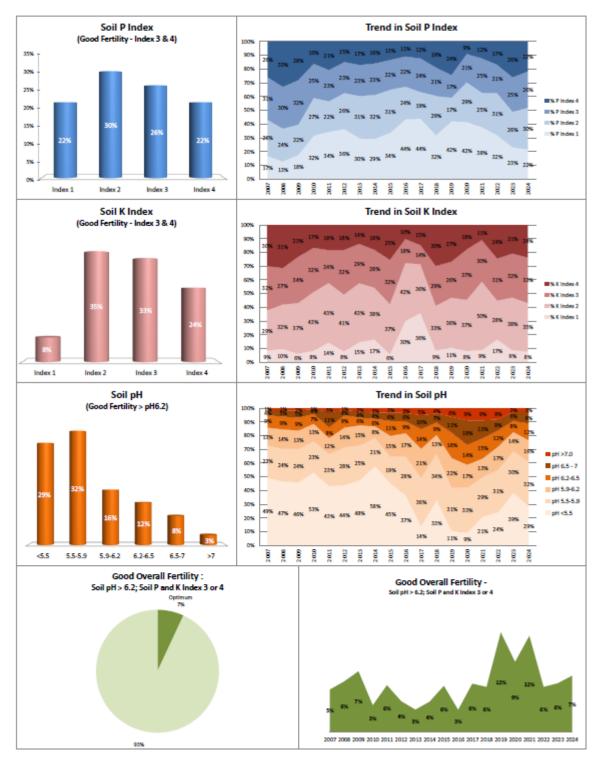
Drystock



Soil Analysis Status and Trends

County Year Enterprise Number of Samples

Sligo 2024 Drystock 1,967



Tillage Insufficient data set available

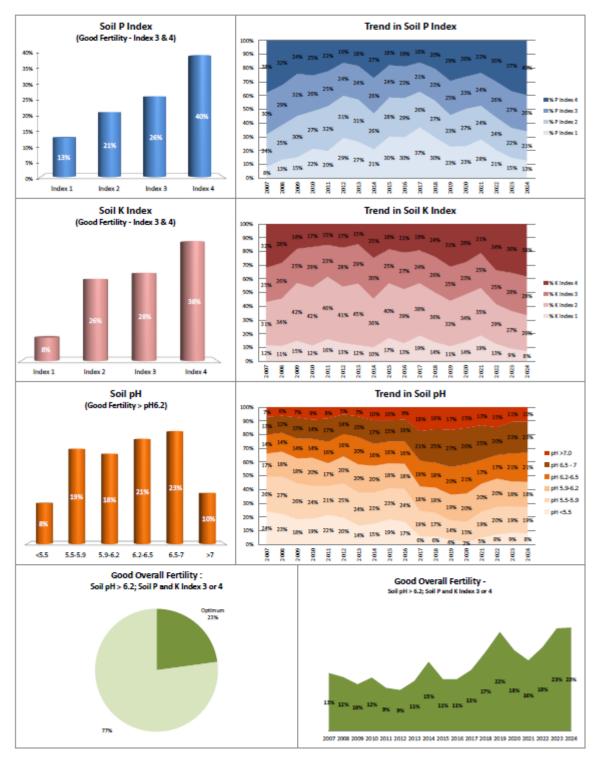
Tipperary soil fertility results 2024

All enterprises



Soil Analysis Status and Trends

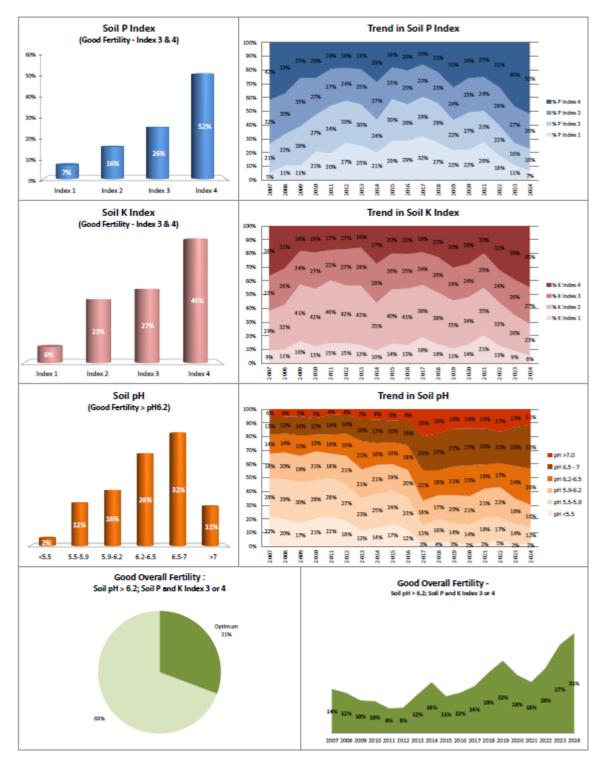
County Year Enterprise Number of Samples Tipperary 2024 All Farms 2,542





County Year Enterprise Number of Samples

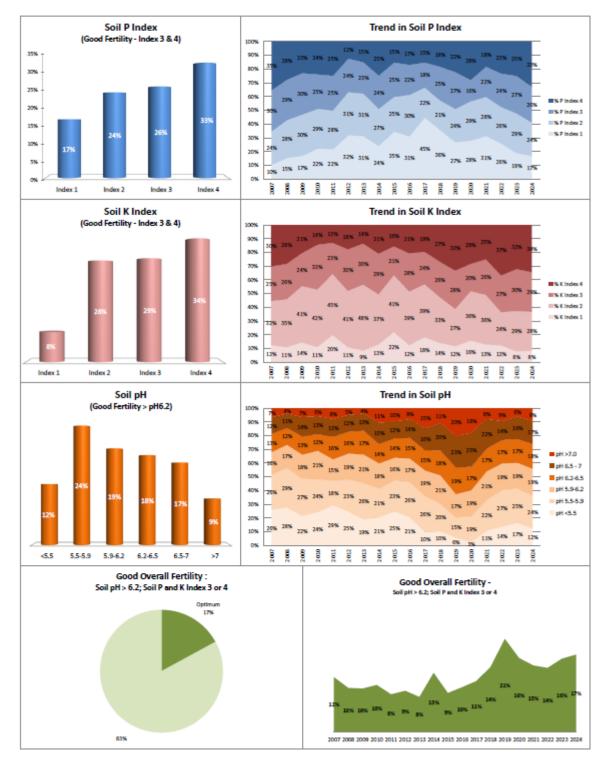
Tipperary
2024
Dairy
924





County Year Enterprise Number of Samples

Tipperary 2024 Drystock 1,527

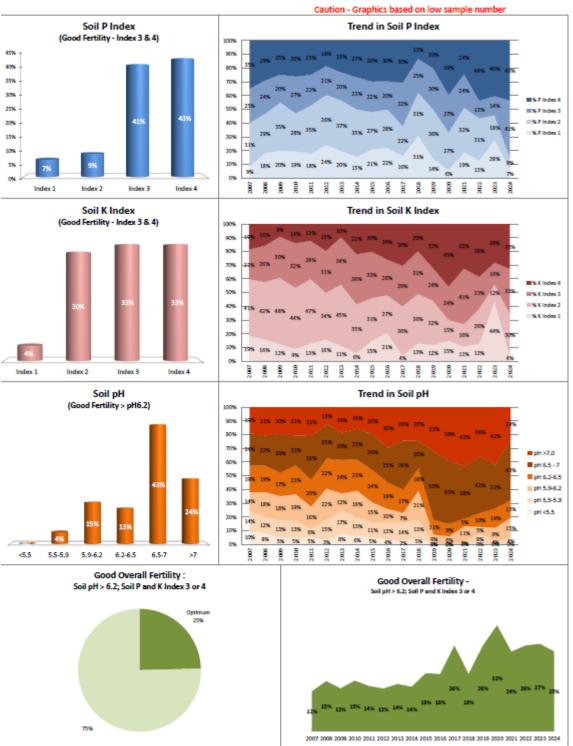


Tillage



Soil Analysis Status and Trends

County Year Enterprise Number of Samples Tipperary 2024 Tillage 46



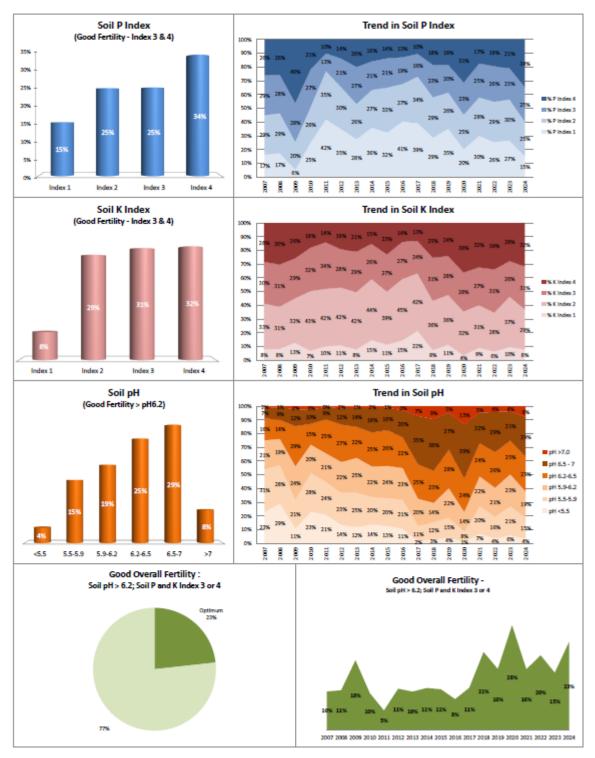
Waterford soil fertility results 2024

All enterprises



Soil Analysis Status and Trends

County Year Enterprise Number of Samples Waterford 2024 All Farms 1,391

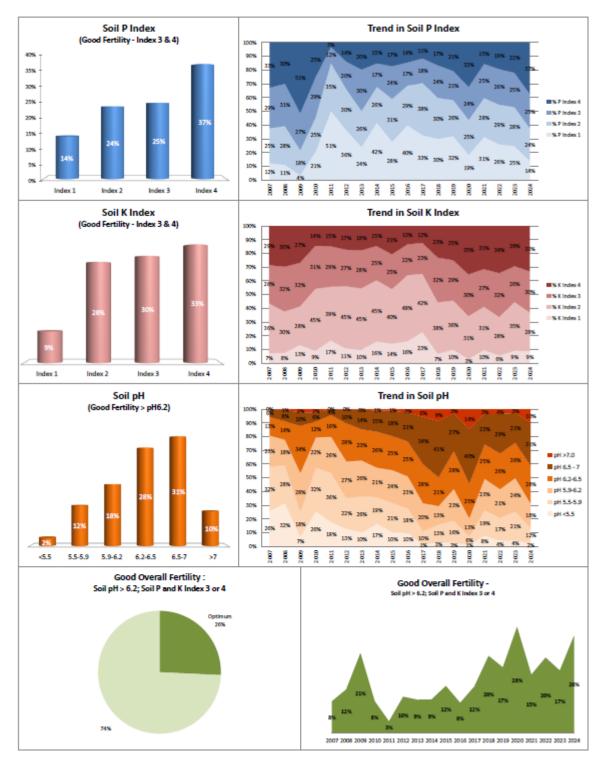


Dairy



Soil Analysis Status and Trends

County Year Enterprise Number of Samples Waterford 2024 Dairy 997

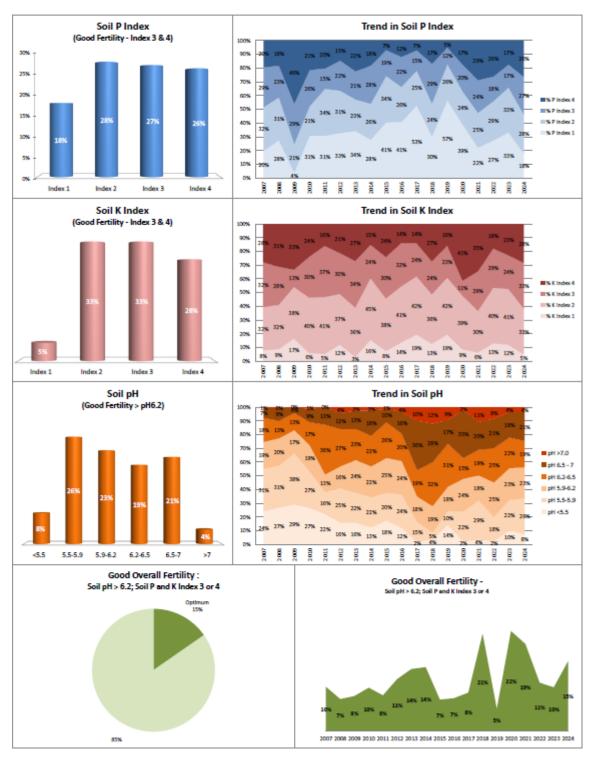


Drystock



Soil Analysis Status and Trends

County Year Enterprise Number of Samples Waterford 2024 Drystock 370



Tillage Insufficient data set available

Westmeath soil fertility results 2024

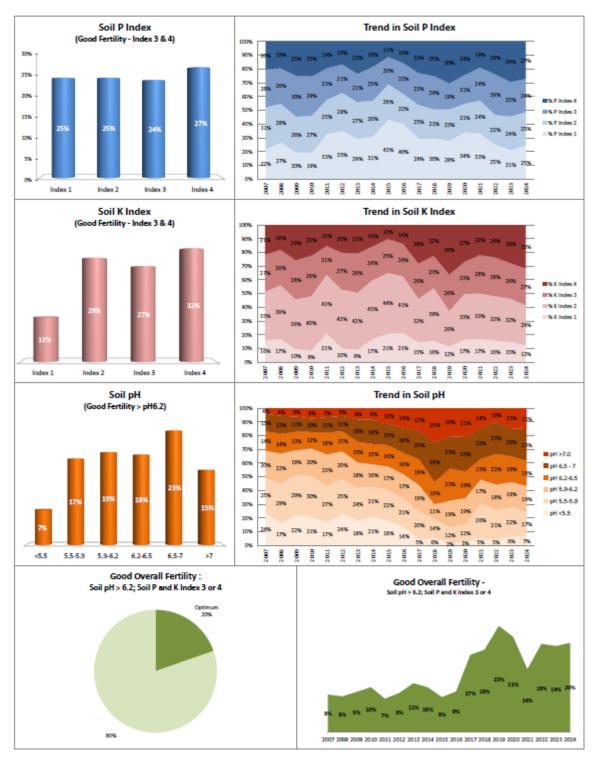
All enterprises



Soil Analysis Status and Trends

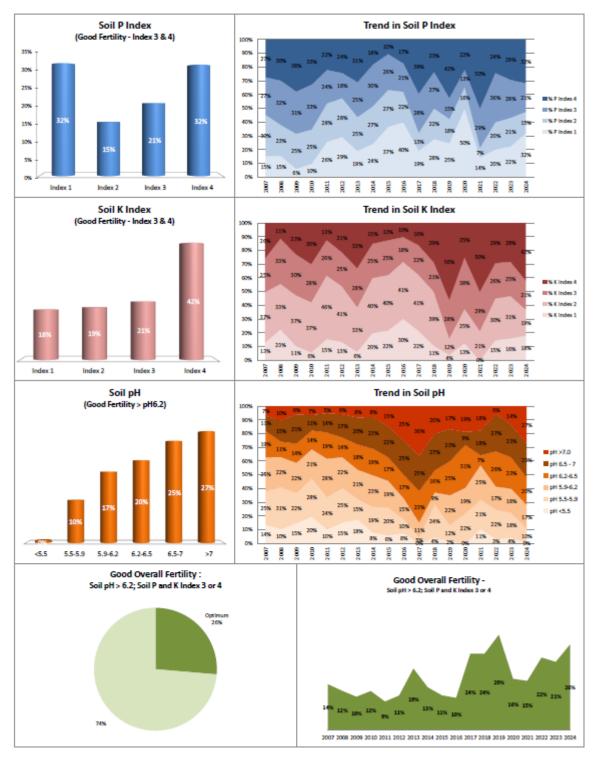
County Year Enterprise Number of Samples

Westmeath
2024
All Farms
1,746





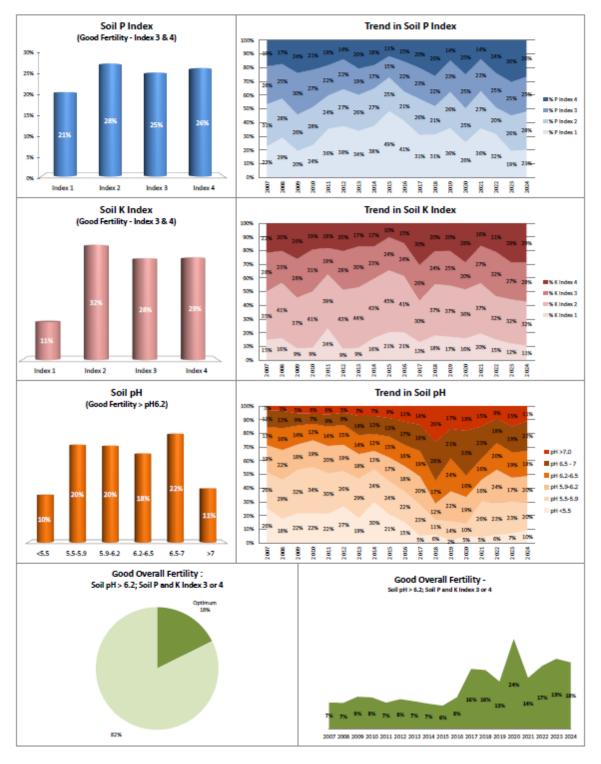
County Year Enterprise Number of Samples Westmeath 2024 Dairy 433





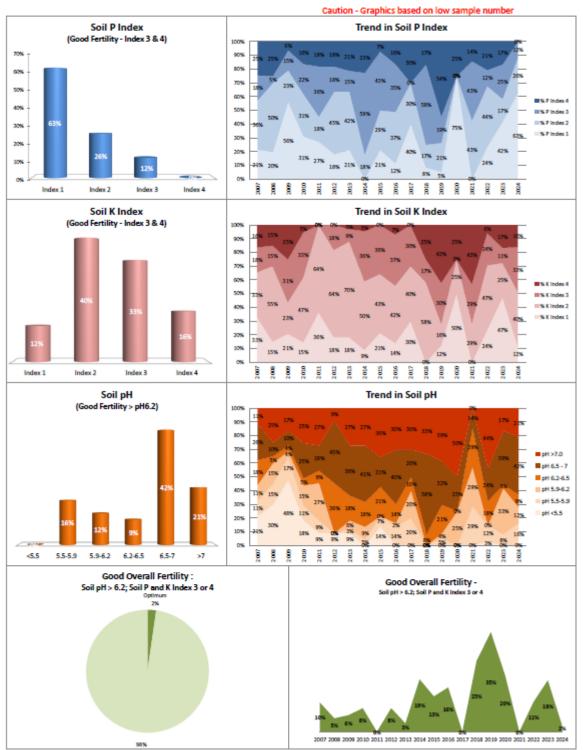
County Year Enterprise Number of Samples

Westmeath
2024
Drystock
es 1,266





County Year Enterprise Number of Samples Westmeath 2024 Tillage 43



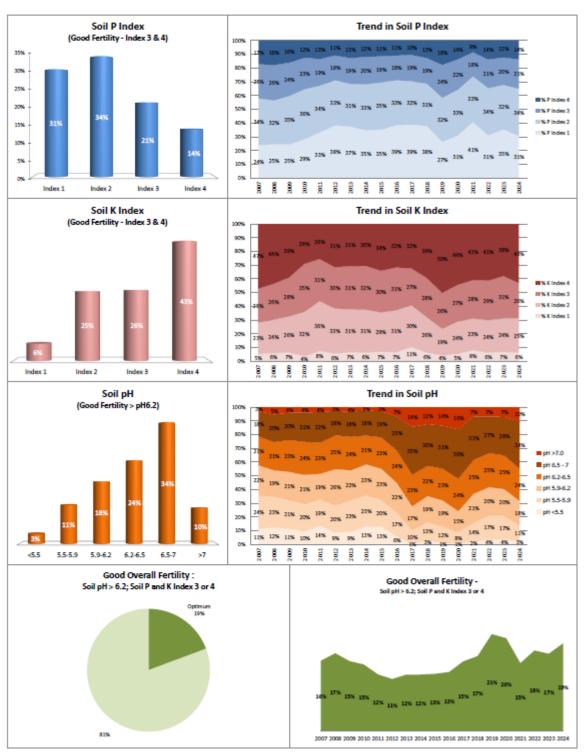
Wexford soil fertility results 2024

All enterprises



Soil Analysis Status and Trends

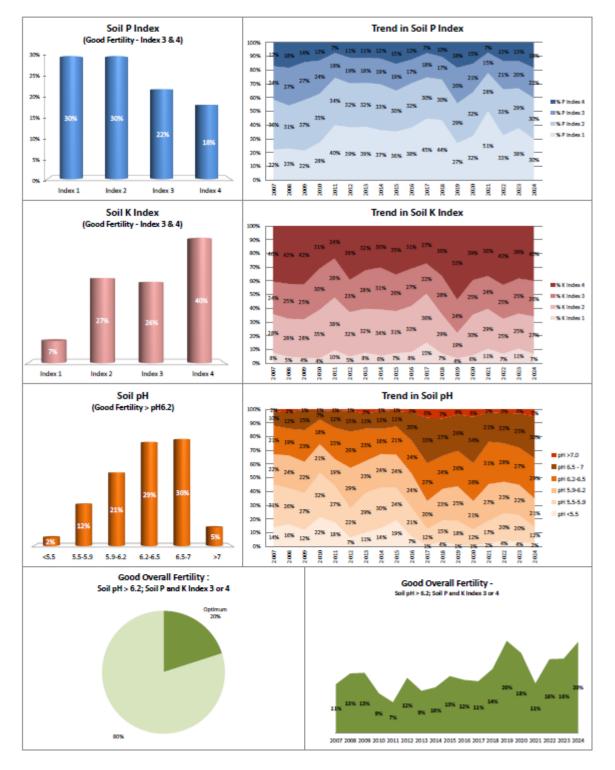
County Year Enterprise Number of Samples Wexford 2024 All Farms 4,798





County Year Enterp Numbe

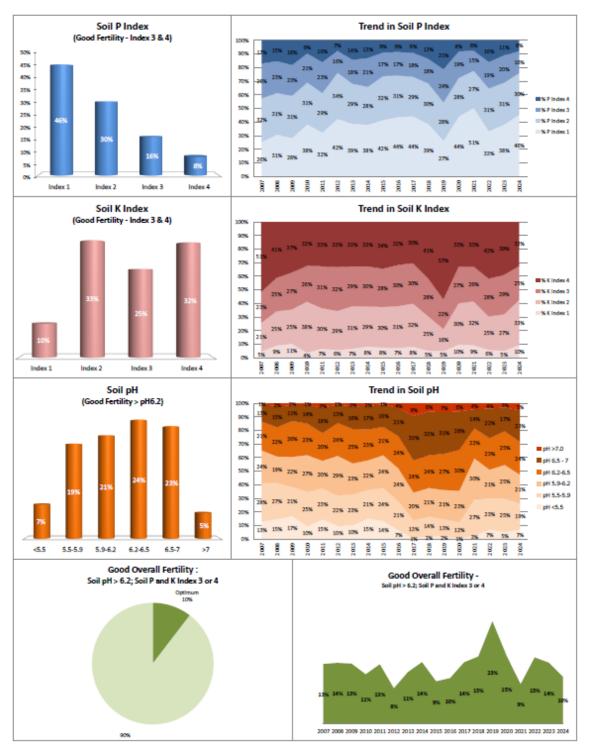
1	Wexford
	2024
rise	Dairy
er of Samples	1,503





County Year Enterprise Number of Samples

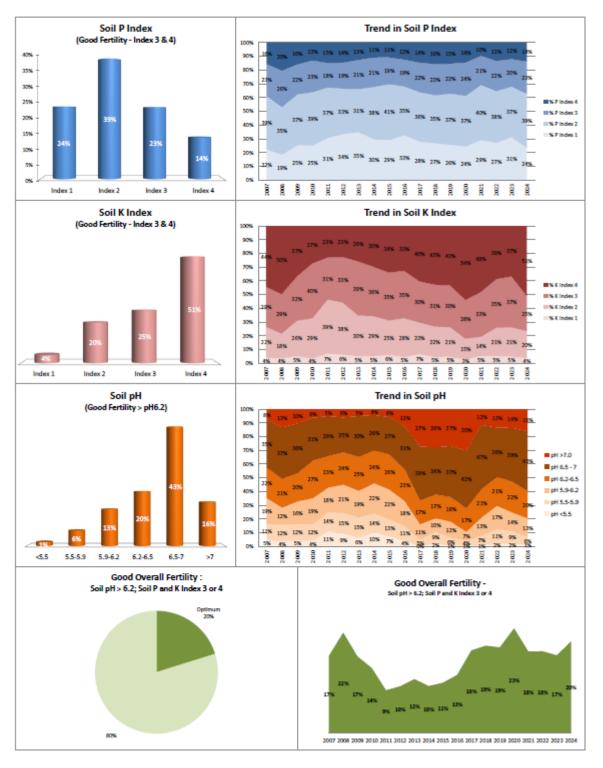
Wexford 2024 Drystock 1,046





County Year Enterpri Number

	Wexford
	2024
ise	Tillage
r of Samples	2,162



Wicklow soil fertility results 2024

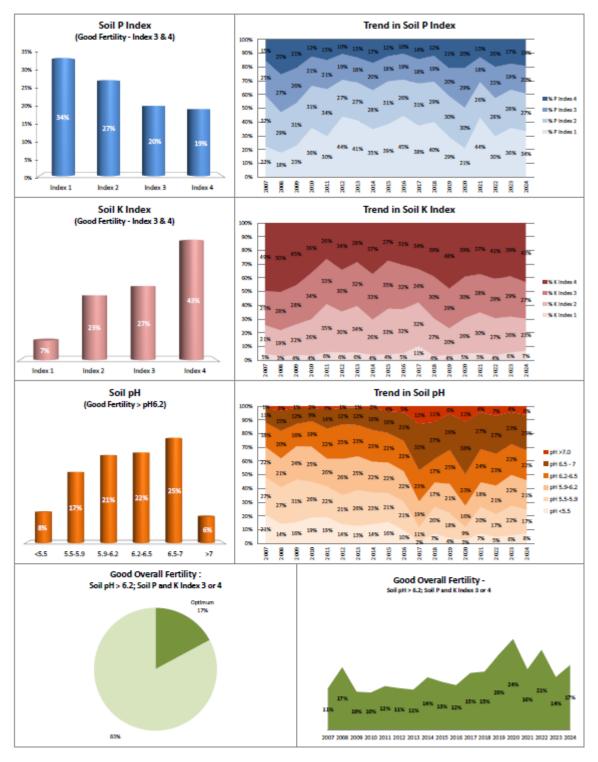
All enterprises



Soil Analysis Status and Trends

County Year Enterprise Number of Samples

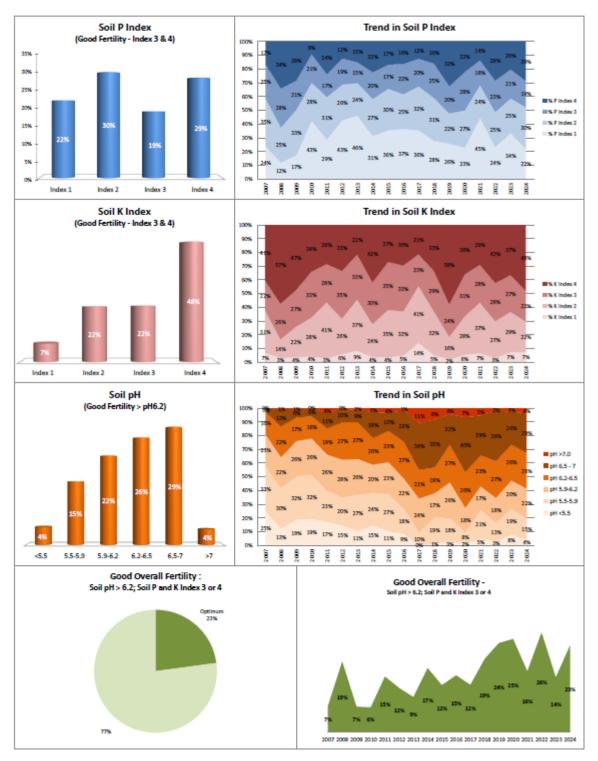
Wicklow 2024 All Farms amples 1,714





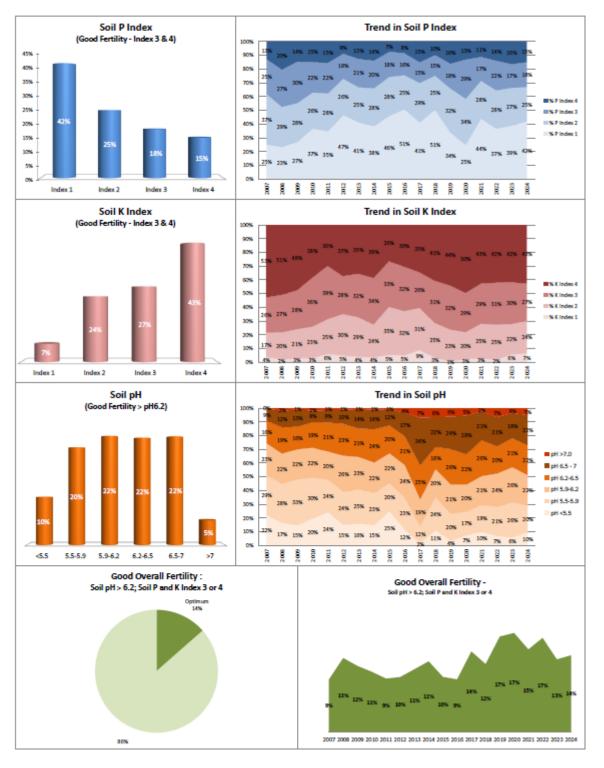
County Year Enterprise Number of Samples

Wicklow 2024 Dairy 388





County Year Enterprise Number of Samples Wicklow 2024 Drystock 1,104



Tillage



Soil Analysis Status and Trends

County Year Enterprise Number of Samples

Wicklow 2024 Tillage 193

