



Technical leaflet

# Building Soil Fertility to Increase Grass Production

## 1 Description of the innovation



Soils are the medium / raw material that we work with every day in the production of meat, milk, grain and fibre for both local and world markets. The health of our soils is a key component to the efficient utilisation of soil nutrients in the production of food in an environmental and sustainable manner.

To maximise the productivity of our soils it's important that we understand their chemical, physical and biological properties. Soil testing is the starting point and the foundation to delivering the correct balance of both for major and minor nutrients.

We tend to look above ground at either the growing crop or the animals grazing on a particular part of our farms. It's however important to take out a spade and examine the soil's structure / biological activity which can reveal a lot about the health of our soils.

Soil management is an important skill for maximising farm profitability plus it's an important part of cross compliance which requires the maintenance of a farm fertiliser plan on an annual basis. This is a critical component of farming as the basic farm payment (BFP) now forms a significant income stream on many farms.



### Advantages

Increase the overall productivity of the farm (sales, farm output & silage production)

Allow higher animal output per hectare relative to soils deficient in lime P and K



### Disadvantages

Farmers need to make a plan and implement the plan.

pH (lime) needs to be correct before building P and K index's



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### Soil Sample

Soil testing is the first step in correcting any soil fertility issues on your farm and to get accurate soil test results you need to get a soil sample which is representative of the area you're testing.

### Applying Lime

If the soil pH is below target pH 6.3, there is potential locked up in the soil waiting to get out. When lime is applied to soils below target pH there is an immediate realisation of nutrients which unlocks this potential and drives grass production on the farm. Our wet climate in Ireland means that a lot of calcium and lime is naturally washed out of our soils making our soils very acidic. For this reason it is important that we apply lime regularly to control soil acidity and keep soil pH as close as possible to the optimum range.



### P & K Index

#### Target Index 3

The aim is to have optimum soil P and K (Index 3) fertility levels in all paddocks. At optimum fertility levels, nutrients being removed in products as meat or milk need to be replaced. Low fertility (Index 1 & 2) soils need to be fertilised correctly to achieve soil index 3.

For soils in Index 3 the fertiliser program should be designed to replace the nutrients being removed, thus maintaining the soil fertility levels.

Index 1 and 2 soils have a very low to low nutrient supply, and require additional nutrients to increase the fertility levels on an annual basis.

Index 4 soils have a high nutrient supply. These soils present an opportunity to save money on fertiliser inputs by harvesting the P and K soil reserves for a number of years depending on the soil test reading.



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### Slurry: Make the most of what you've got!

Slurry is a valuable resource when used effectively by targeting the paddocks which need it most and applying in the right conditions. The nutrient value of cattle and pig slurry are in the following table:

### Balance with Compound Fertilisers

After making the best use of slurry and other organic manures the farm will likely need to be topped up with chemical fertilisers to reach the soil fertility targets. The time it takes to balance soil nutrients can vary depending on the nutrient. K can usually be fixed relatively quickly (move up 1 index per annum) whilst P generally takes longer especially on heavier soils.

Slurry Values (Units/1000 gallons)/4500L		
	P	K
Cattle	5	30
Pig	7	20
Soiled Water	7	5

The amount of P & K needed for optimum soil fertility will also vary depending on farm stocking rate (higher stocking rates will require more P & K to replace higher offtakes), soil indexes (lower indexes require higher P & K to build fertility) and whether the field is being grazed or used for grass silage/hay making (silage/hay production has high K offtakes whereas grazing is usually harder on P index). It is important to remember that getting the soil pH right is foremost as this can in itself raise the P and K soil index.



### More information

- <https://www.teagasc.ie/>
- <https://www.teagasc.ie/crops/grassland/grass10/>