

Putting nutrient management plans into action in the south-west

Grazed grass remains the most competitively priced feed source despite the sky rocketing cost of fertiliser.



Ger Courtney
Business and Technology
Dairy advisor, Teagasc/
KerryAgribusiness joint
programme,



A group of 13 KerryAgribusiness suppliers joined the “Farming for a New Decade” joint programme in November 2020. Six of the farms also joined the Teagasc SignPost programme where targets around climate action were developed over the subsequent months. Soil fertility improvement is a key objective of the programme, and an annual soil campaign, open to all suppliers, drives that objective.

The new demonstration farms were soil sampled paddock by paddock in December 2020 and a nutrient management plan was drawn up in conjunction with the local Teagasc advisor. Colour coded maps were prepared and laminated.

During lockdown, a simple action plan was agreed between the farmer, Teagasc dairy advisor and joint programme advisor over Zoom. The key actions agreed were:

- Budgeting for an increased spend on Lime, P and K build up in 2021.
- Deciding where slurry applications should be targeted i.e low index fields.
- Deciding the fertiliser product mix, the timing of lime and each fertiliser type.
- Recording the lime/fertiliser/slurry data on Pasturebase Ireland and monitoring progress regularly.

Table 1: The progress in soil fertility Teagasc/KerryAgribusiness demonstration farms 2021 vs 2020.

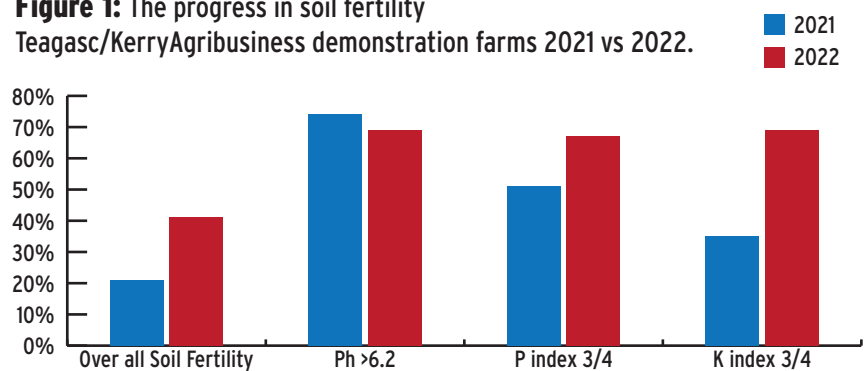
	Overall soil fertility	Ph >6.2	P index 3/4	K index 3/4
2021	21%	74%	51%	35%
2022	41%	69%	67%	69%



John and Micheal Casey, Causeway, Co Kerry. Valerie O'Sullivan

Figure 1: The progress in soil fertility

Teagasc/KerryAgribusiness demonstration farms 2021 vs 2022.



The progress in soil fertility is shown in Table 1.

Conclusion

Putting nutrient management into action requires baseline soil fertility data for each paddock. More importantly, it requires a commitment to action, review and reassess.

In the current environment of high input prices, it may seem like a daunting financial challenge to invest in

soil fertility.

The proven impact of soil fertility improvements on farm grass growth and nutrient efficiency means that self-sufficiency in home-grown forage production must remain a key priority investment, from both an economic and environmental point of view.

Look at the overall investment planned and required, in a five year time frame, and place soil fertility improvement at the top of the list.

Case study

John and Micheal Casey, Causeway, Co Kerry

Michael and John Casey farm in Causeway, Co Kerry, and are demonstration farmers in the Teagasc/KerryAgribusiness joint programme.

In a 115-cow spring-calving grass-based system, getting the most from home-grown feed has always been a major focus for the Caseys. Maximising the growth potential of the farm has taken on a new significance in 2022.

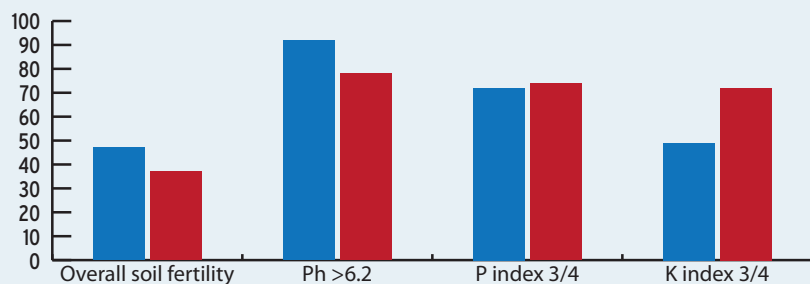
Keeping soil fertility right has been an ongoing challenge in this well stocked farm, but a renewed emphasis on achieving soil fertility targets has ensured that great progress has been made in the last 12 months.

Lime

"Spreading lime is a routine job on the farm, carried out two to three times each year," says Michael. "It's part of the fertiliser programme, just like spreading slurry and compound fertiliser. Where lime is needed on the milking block, it is usually spread in April when farm cover is at its lowest. Lime is always applied to the cultivated ground before reseeding.

"Fields across the farm receive lime every three years. Some areas needed specific attention and soil test recommended amounts are always followed closely." As a result, 90% of all paddocks are on target for pH. Research clearly tells us that, where soil pH is correct, there is a higher level of nutrient efficiency of applied slurry/fertilisers.

Figure 2: The progress in soil fertility on the Casey farm from 2021 to 2022.



Have the Caseys seen this on their farm?

"We have noticed an added kick from applied fertilisers from mid-summer onwards," says John. "This has been put down to the mineralisation and release of added N and P from July onwards when pH is correct."

The Caseys have now embraced protected urea. In 2021, 28% of all nitrogen applied was in protected urea form. That is set to increase this year. John reckons that pH must be correct to assess the effectiveness of any fertiliser product and so far, protected urea has delivered the goods.

Phosphorus and potassium

Soil test results have driven the approach to P and K build up applications. At present, 90% of paddocks are at or above target P index 3. Phosphorus was quite good on the milking block, but needed more attention in the out blocks.

The potassium status on the farm was the weak link, with just under half (49%) of paddocks at target index 3 for K in 2020. Particular attention was paid to

silage ground, or any ground that had bales taken off during the year.

Last year, Muriate of Potash was applied in the mid to late summer on these blocks and it was very effective in increasing the K soil test readings. In the latest soil test reports, 79% of paddocks were correct for K.

"We are planning to apply required K with protected urea fertilisers this year on the basis of 'a little and often' from mid-July onwards," says John.

Higher rainfall in Co Kerry compared to other areas means there is a greater loss of K by leaching and this must be factored in when considering annual applications. John's overall philosophy is: "If you have lime, P and K right, once growth comes, you have the reserve in the soil to drive things on."

Growth has been between 11t-12t DM/ha, and with reseeding, the target is to move towards 13.5t-14t DM/ha by 2024. The foundations have been laid when fertiliser prices were, with hindsight, very competitively priced, and building up soil fertility as an investment, has really paid off.

Sean and Diarmuid Fitzgerald, Cratloe, Co Clare

Sean and Diarmuid are demonstration and SignPost farmers on the Teagasc/KerryAgribusiness joint programme.

The Fitzgerald development plan has as its key objective the growing and utilisation of more grass and the incorporation of clover across the farm to reduce the use of chemical nitrogen.

The graph shows the progress in soil fertility recorded between 2020 and 2021.

Lime

"We first addressed the soil pH issue," says Diarmuid. Since 2020, a total of 257t of lime has been applied to this 67ha farm. Nearly four-fifths of all paddocks are now above the target pH of 6.3. Over 17ha was reseeded in 2021 and lime was incorporated at 2t/ac before sowing.

"I was keen that pH was correct, as we included 2kg coated clover/acre at reseed. We achieved good clover levels (10-15%) as a result."

"Having established clover on 24ha, we have been able to reduce the dependence on chemical nitrogen to less than 200kg/ha this year, compared



to 240kg/ha N last year. This will reduce GHG production by approximately 3%, with a significant reduction in chemical fertiliser to grow our targeted 14t/ha."

The Fitzgeralds decided that in 2021,

as well as the ordinary applications of slurry and 18-6-12, they would improve K status. Over 5t (54kg K/ha) of Muriate of K were applied from mid-summer on.

Many of the index 2 paddocks moved to index 3, which was the main reason that the overall fertility status improved, from 10% of paddocks to close to 40% correct when sampled in late 2021

The Fitzgeralds have also availed of the P build up facility in the nutrient management plan, drawn up by their Teagasc dairy advisor, Aidan Bugler.

"While overall fertiliser cost was considered high at 4.4c/l in 2021, by today's standards, it was a low cost, high return investment," concludes Diarmuid.

Figure 3: The progress in soil fertility on the Fitzgerald farm from 2021 to 2022.

