Different approach to soil fertility

Sean McDermott from Ballinasloe, Co Galway, has started using an enzyme in his slurry to replace artificial fertiliser. **Peter Varley** reports

Last April, I attended an open day on Sean and Nollaig McDermott's farm in Eyrecourt, Ballinasloe, Co Galway. They run an intensive dairy enterprise of 100 cows with an average stocking rate of 2.1 cows/ha.

The McDermotts plan to expand to 145 cows in the next four years. They used to run an 85-cow suckler herd and a 100-head ewe flock, but made the switch to dairy in 2008 because they felt it offered better profitability and a more consistent cashflow. When they were in suckling and sheep, the McDermotts partook in REPS. The scheme put limits on artificial fertiliser inputs for environmental reasons. As a result, the McDermotts only spread straight nitrogen in the form of CAN or urea on their land for a number of years. This meant that overall soil fertility went down to Index 1 across the entire farm. Sean said: "Grass hadn't the same colour; the quality wasn't there and the sward was very open and patchy."

In 2011, the McDermotts started trying to build the soil index again by spreading a bag of 18:6:12 per acre at the beginning and end of the year. "I was finding it very expensive to build up fertility levels when it was at such a low base. One day, I went to a meeting organised by Sobac and I was interested in their products from then on," explained Sean.

Since 2012, the McDermotts have stopped spreading chemical phosphorus and potassium. They have replaced those inputs with a product called Bacteriolit that they add to their slurry two weeks before spreading on the land.

Sean McDermott, above, with his son during an open day on the farm in Eyrecourt, Ballinasloe, Co Galway.

"I started spreading slurry treated with Bacteriolit in autumn 2012. Now, the entire farm gets 2,500 gallons of treated slurry per acre once a year. Since 2012, I haven't spread any phosphorus, potassium or lime, but I have continued to spread nitrogen at the same rates. I have found that grass growth hasn't suffered and, to date, I have grown almost 6.5t DM/ha. Last week, growth rates hit 100kg DM/ha/day," says Sean.

This year, 26 acres have already been cut for silage from paddocks on the 110-acre grazing platform. Sean says he closes an outblock for his silage main cut, so everything cut on the grazing platform is excess growth. Cows are producing 19 litres at 4.25% fat and 3.41% protein on 1kg of concentrates per head. Last year, cows only got 240kg/head of concentrates at grass and only 198kg/head in 2013 and, while housed, they were on a silage-only diet.

What is Sobac?

At the open day, I spoke to Erwain Allain, an agronomist with Sobac, and he explained that Sobac is a French company specialising in slurry additives and "organic amendments" filled with a complex of micro-organisms that are claimed to speed up the development of humus in soil.

The company claims that with the use of its products, a farmer can eliminate the need for spreading lime, phosphorus and potassium, as well as reducing the addition of nitrogen. Erwain and the Sobac team would not divulge what exactly is in their product, which makes it difficult to fully understand how it works or to say that it is a viable alternative to artificial inputs. Erwain claims that this system is suitable for both intensive and organic enterprises.

How it works

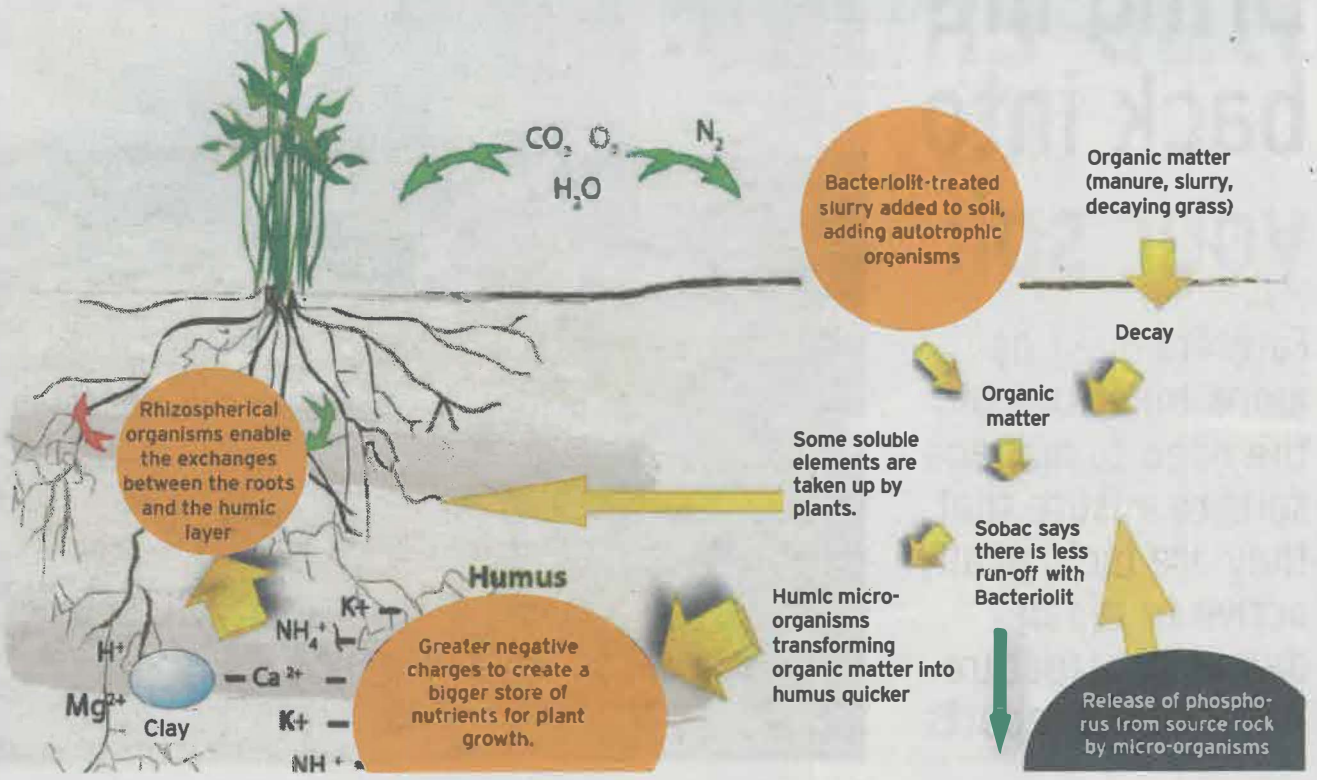
Erwain explains that Bacteriolit is made up of a complex of microorganisms which improve the level of microlife in the soil, allowing it to fulfil its natural cycle. Erwain believes that in order for the process to work, you have to add a complex of microorganisms because if you only add one, or one family, you will create an imbalance.

The illustration on the right shows that any positive-charged element is naturally fixed on to the clay humic complex via the law of attraction, because the clay humic complex is negatively charged. This is why Erwain says that the more humus you have in your soil, the more minerals you will be able to fix and prevent from leaching. Erwain says that the micro-organisms in Sobac's products help to create humus and to improve nutrient exchanges. He claims that they act in three different ways:

- **The autotrophic microorganisms:** Trapping carbon and nitrogen from the air (carbon is the base of humus).
- **The humic microorganisms:** Transforming the organic matter into humus. Humus is the evolution of the organic matter. Organic matter can evolve in two ways – either into humus or rot.
- **The rhizospherical microorganisms:** Enabling the exchanges between the roots and the humic layer.

"By making all of the elements available to the plants we are offering them the possibility to feed on what they really need instead of overdosing them with one element (nitrogen, phosphorus, potassium or calcium, for example)," says Erwain.

Sobac's description of the Bacteriolit process

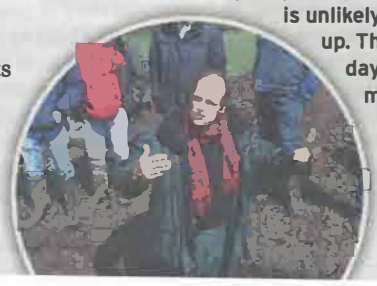


IN SHORT

Sobac is a company specialising in slurry additives and "organic amendments" filled with a complex of microorganisms which, it claims, speeds up the development of humus in soil. The company claims that, with the use of its products, a farmer can eliminate the need to spread lime, phosphorus and potassium, as well as reducing the addition of nitrogen.

Soil fertility

"The stock of elements is constantly renewed in the soil, from dead roots, application of organic matter or fungus attacking the source rock to release phospho-



Comment

Sean is very clear that he took a chance trialling this product. "If it wasn't working, I would be the first person to hold my hands up and say that was the case," he said. He also said that if he continued down the road of building phosphorus and potassium rather than replacement with Bacteriolit, he probably would have the same results in terms of grass growth.

Sean hasn't taken a soil test since 2011, but since he hasn't spread any phosphorus or potassium since 2012, it is unlikely that indices have moved up. The question from this open day is how can the McDermotts run an intensive, low-cost dairy enterprise with low soil fertility indices and still grow enough grass. Sean is also wondering how well this system will work as he pushes cow numbers higher in the next four years.

Sobac shared some trial results from France, which were carried out by institutes, such as INRA and the Chambre d'Agriculture de l'Aveyron. In these trials, the manures treated with Bacteriolit showed better retention of nitrogen, phosphorus and potassium and greater creation of humus in soil. But to be able to say whether or not there is any basis to the claims Sobac is making, rigorous trialling by an independent body such as Teagasc is needed.

Bacteriolit

This is a composting additive composed of natural minerals and a selection of natural composted plants, which are claimed to start the process of transforming manure and slurry into humus. Erwain says that it improves the use efficiency of the farm's slurry. It replaces the need for most artificial fertiliser amendments.

In addition, Erwain says that the smell of slurry is reduced when Bacteriolit is added and nitrogen becomes more available to the plant when spread. One tonne costs €3,900, which will be enough to treat 250,000 gallons or cover 100 acres at 2,500 gallons per acre.