Signpost farms

Saving money and the environment

A range of environment initiatives made this pig business a logical choice as a Signpost farm

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Miriam and Mattie Moore have two pig units: a 1,600-sow pig unit rearing pigs up to 18kg liveweight at Cannakill townland Croghan, Rhode, Co Offaly, and a finishing unit at Rath East townland in Co Wicklow.

"Finishers consume 70% of our meal each year so Rath East was the logical location when we built a feed mill in 2009. We bring meal from the mill back to Croghan for the sows."

To achieve even greater integration and efficiency, the Moores grow an increasing proportion of the pigs' diets, using home-produced manure to fertilise their winter barley, wheat and rye crops.

Mattie Moore and John Mahon.

Mattie, a pig farmer at heart, and his staff are equally at home at field work, farrowing or feeding finishers. Miriam looks after the administration of this complex operation.

From an environmental perspective, there are a number of features on this Signpost farm that are important. On the pig farm LED energy-efficient lights are used in the pig houses.

The heating system is a wood pellet boiler, eliminating the need for fossil fuels. Solar panels will soon be generating 50% of the electricity required on the sow farm. "These investments improve the economic viability of the business and boost our sustainability credentials," says Mattie.

The Moores have three years' experience using an umbilical system with a band spreader to apply pig slurry to their crops. "Compared to using a tractor and slurry tanker we have less soil compaction, and we can apply pig slurry in growing crops at the optimum time for nitrogen, phosphorus and potassium uptake," adds Mattie.

Spring application enables the organic fertiliser to deliver a greater portion of the crops' N requirements, reducing the need for expensive bagged nitrogen. In addition, the system has the capacity to cover large areas of ground before application windows close.

Winter rye, a new crop on the farm, will help spread the tillage workload and may replace some of the winter wheat in the future. "We are looking forward to seeing how this grain performs in the pig diets," says Mattie. Teagasc research suggests that it can be included at up to 60% in finisher diets.This farm was selected as a Signpost farm because it uses organic fertiliser (pig slurry) to grow some of the feed requirements for its overall pig production enterprise.

Gerard McCutcheon, Mattie Moore, John Mahon and Kevin Browne.

Using pig slurry to reduce fertiliser costs and inputs

Slurry from the sows eliminates the need to purchase chemical phosphorus (P) and potassium (K) for the Croghan farm's 95ha of cereals. The slurry is also a valuable source of some of the other nutrients that crops require such as manganese, copper, zinc, sulphur and magnesium.

The nutrient content of pig slurry is closely related to the dry matter content. The dry matter percentage depends mainly on the amount of water added either in the feeding and watering of the pigs or from sources such as washing of houses, leaks, spills or from roofs, open tanks or dirty yards.

Good manure management will ensure minimal dilution with water. The need for storage is reduced and transport costs are lower if the manure is sold off-farm. Pig manure that contains 4.3% dry matter is consid-

Table 1: Nutrient content and value of pig slurry (4.3% solids)

	Nitrogen (N)	Phosphorus (P)	Potassium (K)
Nutrient content kg/m³	4.2	0.8	2.2
Nutrient availability %	50	100	100
Available nutrients	2.1	0.8	2.2
*Fertiliser cost per kg €	2.17	4.60	1.66
Value € of each nutrient	4.56	3.68	3.65

Note: 1m³ equals 220 gallons. *Based upon chemical fertiliser prices on 1 March 2023. The dry matter (DM) and nutrient content of the pig slurry can be assessed quickly using a slurry hydrometer.

Table 2: Typical N,P and K value of pig slurry (available units per 1,000 gallons)

Dry matter (%)	N	P	K
2	11	4	11
4	19	7	20*
8	25	14	21

*Teagasc Green Book & McCutcheon, 1997; Tunney, 1987

Table 3: Organic manures, types an carbon supply

Manure type	% DM	Application rate	Carbon (t/ha)
Pig slurry	4%	25m³/ha	0.4
Cattle slurry	6%	25m³/ha	0.6
Layers manure	55%	5t/ha	1.1
FYM	25%	25t/ha	2.5
Mushroom compost	32%	20t/ha	2.6

(Richie Hackett, 2010)

Soil carbon

An additional benefit from using organic manures is the boost to soil organic matter/carbon.

This brings other benefits to continuous tillage soils such as – feeding soil microflora and improving soil structure. Building soil carbon is a slow process.

"We are in it for the long term (they have two young sons) and we will take whatever steps contribute to the overall sustainability of the business," conclude Mattie and Miriam.

ered reasonable quality. A minimum of 5% solids is preferable.

The fertiliser value of pig manure at 4.3% solids is €11.89 per m³ when there is a requirement for N, P and K (see Table 1). This translates into €54 per 1,000 gallons. A reasonable rule of thumb is that a thousand gallons of pig slurry is equivalent to a 50kg bag of 19:7:20.

The DM% and nutrient content of the pig slurry should be known, as this will determine the required application rate for the field. Also, make sure that the slurry is well agitated before it is applied to land to get a more homogenous/consistent fertiliser application of N, P and K.

Tillage Signpost farms

Nitrogen accounts for approximately 80% of the greenhouse gas (GHG) emissions from crops.

The tillage sector is the lowest emitter of GHGs. Beef farms have three, and dairy farms seven, times higher emissions per hectare than a tillage farm.

The pig sector is a small component of our national emissions at about 4% because the sector is relatively small (about 140,000 sows plus progeny in Ireland) by comparison to other more intensive countries.

In the tillage sector, there are 12 goals to reduce gaseous emissions. The first three relate to correct soil pH, optimum soil P and K levels and increasing the N usage efficiency.

The investment in an umbilical system has allowed the Moores to apply slurry on to growing crops. "The umbilical system together with the GPS system have given us confidence in getting a more even spread of slurry and a better utilisation of the nutrients in it," says Mattie.

Pig manure has been applied to growing winter cereals on the farm over the last two years. Previously all land received 33m³/hectare (3,000 gallon/acre) of pig slurry (about 4% dry matter) incorporated in the autumn time at planting.

All of the P and K in the pig slurry is available but only 10% of the available N is taken up by the growing crop (when using autumn application). If this slurry goes out in springtime on to a growing cereal crop the fertiliser N value is 10 times greater because the crop is actively growing and has a large demand for N. This reduces the crop's N requirements by almost 70kg/ha (57units N/acre).

"Our aim is to increase our slurry storage capacity from six to seven months currently up to 12 months," says Mattie. "Which will allow pig slurry to go out in the spring, eliminating autumn application."

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