



Infrastructure: an unbeatable investment

Good roads, fences and water systems increase grass utilisation and farm profits. An audit will identify any deficiencies in your infrastructure.

Mark Moore

As prospects go, an audit is up there with a dental check-up. Nonetheless, John O'Sullivan, John Leahy and Danny Bermingham, who are all part of the Teagasc joint Programme with Kerry AgriBusiness, volunteered to have their farm infrastructure audited this spring.

"It involved walking the farm with my local Teagasc advisor Denis Brassil, Ger Courtney, James O'Loughlin and Pat Tuohy (both of the Teagasc Heavy Soils Programme) to see whether my farm roads and spurs, water piping and troughs and paddock sizes were fit for purpose," says John O'Sullivan, who farms at

Ballygree, near Castleisland.

In Kerry, rainfall is high at 1,600mm and many soils (like some of John's) have limited porosity, which makes good infrastructure essential in order to avoid poaching and soil damage. In the county, farmers budget for a six-month winter and maintain a fodder reserve too.

John O'Sullivan has 105 cows on 43ha, with an additional 15ha as an outside farm. "As in most of the country, we had a really wet difficult spring and it showed up some of the shortcomings of our infrastructure and because we couldn't get cows to some paddocks without causing huge damage, we had them indoors for more than we wanted in February and March."


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Like his two colleagues, John O'Sullivan demonstrated the changes he made as a result of the audit at an open day in October.

"The benefit of having really good infrastructure is that you can achieve more grazings in the shoulders of the year when conditions are borderline," says Denis Brassil.

"Work at Teagasc Moorepark has shown that it's worth €3/cow for every extra day she is grazing in the spring and €2 in the autumn."

The traditional farm diary is a good place to record on which days cows were in or out during the early spring.



Christopher, Marion, John, Liam and Sean O'Sullivan.



"You only need to get 10% more grazings between mid-February and mid-April to pay for really good infrastructure," says Ger Courtney. "There are 120 potential grazings in this period and if the infrastructure enables you to get out for an extra 12 of them, you are already ahead."

"In the Teagasc Heavy Soils Programme, there are farmers who are achieving 60 grazings, which is very good, but there are also farmers who are only getting 20 grazings in this period. The grazing targets are inevitably going to be lower on heavy farms, but progress can still be made in getting more grazings in spring."

"It is important to highlight however that the objective is not to get cows out regardless of weather or ground conditions, but rather that when conditions are improving, cows may be able to be put out if infrastructure is good. Even if that's only for three hours, you are improving grass utilisation."

"Upgrading your infrastructure is a really good investment," says John O'Sullivan. "A rough figure is that you will need to invest €1,000/ha for a fairly comprehensive upgrade to include additional roads or spurs, piping and troughs. Drainage or digging a well would not be covered in

this cost, but the investment will still generate a very healthy return of 10% to 15% per annum.

"We're always looking for ways to make better use of grass. For example, the cows are usually keener to go out in the evening if it's still bright, so we will often milk earlier in the afternoon to make that possible."

"Having good infrastructure is also better for people, because it reduces

drudgery and makes the job easier and possibly more attractive for the next generation."

"The benefits are seen in extra solids and greater labour efficiency," says Denis Brassil. "The cows are not in the yard eating silage and they bring their slurry to the field. By grazing the grass, they stimulate extra growth. The goal of the Teagasc Grass10 campaign – 10 grazings in

Necessary investment

"Farmers have had to spend money in yards on cubicles, parlours, slurry storage, etc, as they increased cow numbers when quotas went to remain compliant and for ease of management," says Denis Brassil. "Grassland infrastructure was the Cinderella and was, to some extent, neglected. So now you have 100-cow herds in an infrastructure setup for 60 to 70 cows, for example."

"It's important to consider if paddock size is still appropriate for the size of your herd and also the size you intend it to become. A rule of thumb is that paddocks should be able to allow 36-hour grazings in the main season, but have the flexibility to support three- to four-hour grazings in the shoulders of the year."

"As herds get bigger, you may need to look at your paddock structure; flexibility is key and that's what good infrastructure gives you, particularly in wet areas. The good news is that the return on grazing infrastructure investment is higher than for many other on-farm investments."

But do these roads take up a lot of area reducing production? "Even on John O'Sullivan's farm, less than 1% of the farm is covered by roads," says Denis Brassil. "The economics of production are greatly improved and any loss of production under roads is inconsequential."

the year on each paddock – will not be possible if you don't get at least one grazing done by late March."

Getting the work done

So how should the farmer go about getting the work done? "Well the farmer will be dependent on a contractor to remove topsoil, etc," says Ger Courtney.

"A quarry will need to deliver the hardcore and aggregate. While you might be able to do the fencing yourself, it is usually a good idea to contract it out."

"Farmers are busy enough. Often they don't get infrastructure done because they don't have the time. There are plenty of contractors available in the relatively quiet times of July and August."

"This was a year which had a dreadful spring followed by a wonderful summer for getting work done," says John O'Sullivan. "The ground was so hard that lorries from the quarry were able to drive to where new roads were being constructed rather than leave aggregate in the yard. Mostly, the work is done over the summer, but you could improve existing road surfaces over the winter."

Ger Courtney says the lessons learned in Kerry are relevant for the

Water supplies

The summer was also a year that showed the need for adequate water troughs and piping. John said he can see exactly how much cows are drinking from his meter. Even when they are eating moist juicy grass, they will drink 40 litres/day.

Speaking at the open day on John's farm, Pat Tuohy of Teagasc spoke about different aspects of water pipes, pointing out that doubling the diameter of the pipe increases its flow rate fourfold.

"Cows need to drink four litres of water for every litre of milk they produce. On hot days, cows could drink up to 120 litres each," says Pat.

"You can quickly see whether you have enough trough space. If they are crowded around the trough waiting, you don't have enough. Five per cent of cows (one in 20) should be able to drink at any one time. You need about two and a half feet of trough rim per cow at any one time. John's troughs have a nice feature, which is a plug to let out all the water quickly, which allows the water and the trough to be cleaned. Another nice feature is aggregate around the circular trough, so mud doesn't develop there."



John O'Sullivan and his Teagasc advisor Denis Brassil discuss paddocks.

whole country; even farms in much drier areas will have parts of the farm which are wet and good infrastructure is needed to get to the dry paddocks possibly passing through wetter (ungrazable) areas of the same paddock.

"The best way to follow up on an audit is to make a plan on a map with your local Teagasc advisor," says Ger. "If the dimensions and locations are clearly marked on the map, most farmers can project manage the implementation."



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Table 1: Infrastructure audit

	Adequate	Needs attention	Not fit for purpose
Paddocks			
Size			
Access			
Drainage			
Fragmentation			
Roadways			
Sufficient			
Width			
Cow flow/quality			
Spurs			
Water supply			
Source/pressure			
Pipe network			
Troughs number and size			

How do you do an infrastructure audit?

Paddock size, roadways and water supply are the things to assess. Colour coding can help highlight priorities. Green means infrastructure components are adequate, yellow means they need attention, red means they are not fit for purpose. Assign a percentage to each to get an overall picture.

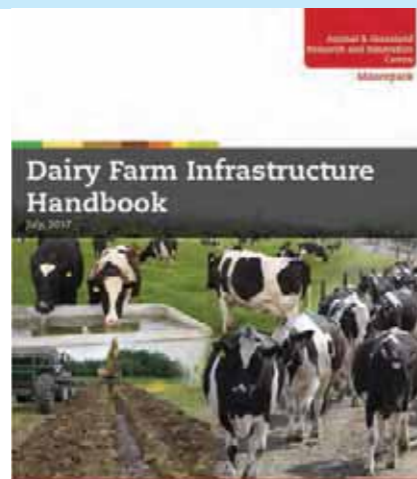
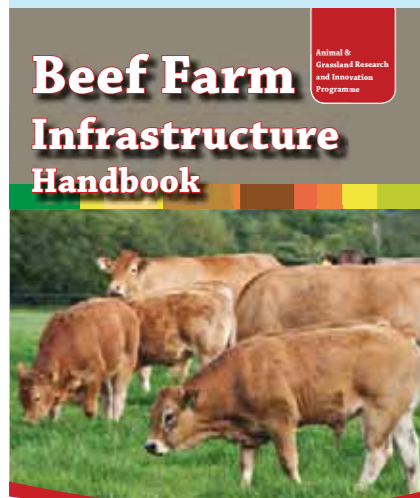
I reckon three-quarters of the farms in the country would benefit from doing an audit, so it is worth doing on most farms, especially if they have done no infrastructure work in the last five years.

"An infrastructure audit is a great topic for a discussion group to address, because members can contribute thoughts and ideas," says Ger Courtney. "It leaves you with a project to do in a quiet time in June, July, August or September when contractors should be available. When the group comes back a year later, it can see what progress was made."

Ger says the intensity of roads has to be greater the wetter the farm. On wet ground, all parts of the paddock need to be within 75m of a spur or main road, otherwise cows will do a lot of damage by trafficking the soil. On drier paddocks, 150m is an adequate limit.

What is the difference between a road and a spur road? A road must be able to carry machinery and would be perhaps 5m wide for a 120-cow herd. Spur roads are simply intended for use by livestock. They might be only 1.6m wide and are of most benefit during the shoulders of the year, especially in wet conditions. Even on relatively dry farms, they might allow you to get animals past a wet area to get to drier areas of the same paddock without causing damage.

Reseeding and soil fertility are not addressed in the audit; these are both key factors for grass output, but are not intended to be in the infrastructure audit.



Niall O'Meara

Niall O'Meara, who farms between Portumna and Loughrea in east Galway, has 30 suckler cows, which calf from mid-August to the end of October. He has a firm belief in the value of good infrastructure.

"I have 24ha of land, but 45 paddocks," says Niall. "I'm completely convinced of the value of grazed grass. Mine is a rotational paddock system, but it doesn't matter what kind of system you have so long as you are getting grass into them. To do that, you need really good infrastructure."

Niall's bull calves are sold to a local feed lot at 500kg and 12 months. These bulls will have eaten just 70kg of barley and 50kg of beef nuts in that year.

Most heifer calves are kept for breeding and are typically 14 months when they go to the bull. The heifers will only have eaten 70kg of barley. In 2017, the heifers were averaging 485kg when they went to the bull.

"It's about grass utilisation rather than breed," says Niall, who has Charolais, Limousin, Angus and Salers cows. He believes in AI and focuses on milk, docility and gestation length. Their calves have access to grass in winter.

"The paddocks are a huge benefit in the shoulders of the year," Niall says. "I could be letting 75 animals on to a half-hectare paddock in spring. Depending on conditions, they could be there for four, six or eight hours."

Once the animals are moved, Niall will have a contractor put slurry on to that paddock.

All animals come in on November 1. They are on silage and the breeding season starts on November 7.

He will close the first paddock on September 1 and the calves will have creep access to that paddock from November. The calves might have access to as many as 12 paddocks in rotation over the winter.

He says much of his infrastructure is very basic – hundreds of pig tails with white electric fence tape. Occasionally, the calves will break through into the next paddock looking for fresher grass. Cows rarely do.



Niall adds that he has been gradually increasing the number of paddocks that are accessed from a roadway. Under half are at the moment, but he says he aims to have it that 75% to 100% of paddocks will be accessible in the future.

"Dairy farmers have one herd," says Niall. "We can have as many as six mobs or groups of cattle in the spring, which makes it much more complicated to manage paddocks."

He says he has a black half-inch water pipe with Ts off it; he calls it cheap and cheerful. He would recommend paddocks to others.

"If someone is letting 40 cattle into a 15ha field, they should do an experiment – simply break it into four divisions. They will see the benefits of fresh grass and I'm convinced that, as a result, would then go for a much more complex paddock systems.

"I know it works, as I weigh my animals as many as seven times in a year and you can see the weight gain from fresh grass. We have no control over the price, so we have to focus on efficiency."