

How farmers can overcome the problems of rural telecoms

We might live in a country with the world's fifth highest GDP, but when it comes to 4G coverage we are 54th in the world, behind Peru and Albania, and at the bottom of the European table for Fibre to the Premises (FTTP), according to Dave Millett of independent telecoms brokerage Equinix.

And if you live in a rural area, the situation is even worse. So, what are your options?

Internet

In 2011 the government set up the Broadband Delivery UK (BDUK) project, with the aim of bringing superfast broadband to 95% of the country by 2017. But that missing 5% represents 1.25 million homes, mainly in remote rural areas.

Small fibre and Wimax providers are popping up

throughout the country, and they are definitely worth checking out. The fibre providers offer speeds of up to 1GB, and because they are pure fibre, there is no need for a landline. But they are incredibly restricted in terms of geographic availability.

You can find what is going on in your county here: cable.co.uk/guides/rural-broadband/.

Farming businesses can look at dedicated lines as they guarantee speeds, but unlike standard broadband, pricing is distance dependent. A small business in a remote part of Ceredigion found the best price was over £1000 a month for a 10MB circuit, far too high a cost for most farms.

The Government has announced some planned help for businesses in rural areas but the full details of that help have yet to emerge.

Mobile

Every mobile network offers an online checker for their coverage, which is well worth consulting as each network will have strong and weak areas. But with only 95% coverage across the UK that leaves over 1.25 million premises without a mobile phone signal.

If Ofcom and the Government were serious about improving rural coverage they could force the networks to allow free roaming within the UK. From July 1, 2017, you will be able to roam free in Europe but not in the UK. The networks have so far resisted this step, to the detriment of rural businesses.

One solution, if you have fast enough broadband, is to plug in a booster in order to improve the signal. If the coverage maps say you should get indoor service and you are not, then the network

provider will usually give you a booster for free, especially if you push them and tell them you are leaving as they are not meeting their commitments.

Landline phones

If you do not have a phone line at your premises then BT and Kingston Communications in Hull are required to install lines at the standard price even if it involves extra costs. Sounds good, but, as you might suspect, there is a catch. The extra costs, up to £3400 for phone lines and £1000 for ISDN2 connections excluding VAT, are free. But, above that the customer has to pay. Now £3400 may sound a lot, but you need to look at how the charges can build up.

This is something anyone can do at: bt.com/pricing/current/ExcessConstructionboo/2-1319d0e1.htm

One farmer in Scotland was recently quoted around £20,000 to install a landline to his property located a mile from the highway. The £3400 offered by BT did not make much of a dent in that quote.

The farmer's only option was to continue to use satellite for his business despite the area having been provisioned for fibre broadband. He also has no landline connection and must rely on a weak mobile signal with a booster.

On a more positive note, the cost of satellite broadband has now come down to under £100 a month. While usage is capped and streaming films could make it expensive, it is now a viable option for businesses.

In summary, while the choices still remain relatively limited for most rural businesses, it does pay to

explore all your options. A high percentage of people have not opted in for fibre broadband even when it was available. It is important to check its availability regularly and also check the mobile coverage maps, as networks are constantly changing where they offer service.

Dave Millett has over 35 years' experience in the telecoms industry, having worked for several global companies. He now runs Equinix, an independent brokerage and consultancy firm. He works with many companies, charities and other organisations and has helped them achieve savings of up to 80%. He also regularly advises telecom suppliers on improving their products and propositions. equinoxcomms.co.uk

Data farming provides new insights into soil fertility

Scientists from the British Geological Survey and NRM Laboratories have found a novel way of using soil data to assess soil fertility. Maps show that the pattern of more acidic soils – which can reduce soil fertility – increasingly reflect geology and typical rainfall patterns across England and Wales. In recent years, less agricultural lime has been added to farmers' fields to neutralise soil acidity.

The new approach uses soil measurements to monitor how key soil properties change at the national scale, but can also highlight regional issues. By using soil measurements and locations from many thousands of farms, scientists can create maps and assess overall changes in properties that influence soil fertility and crop yield.

Smaller quantities of lime have been applied to agricultural fields of England and Wales in recent years which may have contributed to an increase in soil acidity. Agricultural lime helps to neutralise the various sources of acidity in the soil.

The study which is published in the *European Journal of Soil Science* focused on soil data between 2004 and 2015 for five important soil properties or indicators: soil pH, available phosphorus, potassium, magnesium and soil organic matter, in both arable and grassland systems. The results were encouraging. One of the main advantages of the farm data is that because there are so many samples, maps of soil properties can help to identify regional issues that may be missed by other surveys.

"Because less agricultural lime has been applied to agricultural soils over recent years, we increasingly see natural factors influencing the patterns of soil acidity across England and Wales," said Dr Barry Rawlins, who led the research. "Agricultural soils further to the north and west generally have a smaller capacity to neutralise soil acidity because of the underlying geology, and the greater quantities of rainfall in these areas reduce that capacity



Soil fertility increasingly reflects underlying geology and rainfall patterns

further. This is less of a problem in the south and east. Farmers need to be aware of these differences because acidic soil is less productive, and they need to apply more agricultural lime."

Based on measurements taken over the past six years around 40% of farmers' fields across England and Wales have concentrations of soil potassium that are below the optimum and around 25% of fields have below optimum soil phosphorus levels.

Agricultural experts are being encouraged to help deliver new soil data using smartphone technologies. This could be used to monitor soil properties if users regularly recorded geographic coordinates and details of soil samples.

Tractor cab gets virtual reality check

Claas's interactive tractor guide brings virtual reality and augmented reality into the world of agricultural machines.

The purpose of the guide, which supplied as a free app for a smartphone or tablet, is to explain the various functions available in the Claas tractor cab. The app does not replace the conventional hard-copy manual, but provides an easier way to answer some questions about cab functions. Instead of leafing through the manual, the user only needs to take a photograph of the relevant tractor controls with a smartphone.

The app uses augmented reality technology to locate the required control component, which might only be a simple indicator light. It then takes just a click on the smartphone or tablet to bring up an explanation of that function. For some of the more complex functions, it is planned that explanations will take the shape of tutorials to make the information easier to understand. To locate a



Claas's interactive tractor guide can even be used away from the cab

particular control component in the cab, the app has an integrated search function that uses the telephone's position finding system.

It is also possible to use the app from outside the cab. Instead, virtual reality and VR goggles are used to create a virtual experience of sitting in the cab (in 2D or 3D).

The app is available for all Claas tractors with infinitely variable Cmatic transmission technology (Ario 500 and 600, and the Axion 800 and 900), with further models to be added in the near future.

Find it on the App Store or on Google Play.

Trelleborg announces launch of self-adjusting variable inflation pressure system

Trelleborg has announced the launch of a variable inflation pressure (VIP) system that is capable of self-adjusting the pressure of a combine harvester's tyre during operation according to its precise load, and in so doing optimise the tyre's footprint in order to reduce soil compaction.

"The Trelleborg VIP system represents a step forward compared to the TPMS (tyre pressure measurement system)

or TMCS (tyre pressure control system) already on the market," said Trelleborg's Piero Mancinelli. "This is because the VIP system is able not only to measure and/or change the tyre pressure but also, being an intelligent system, determine and adopt the right pressure at the right time and in the right place, without manual intervention. This is completely in-line with the precision farming philosophy."

The company's tests have

shown that the VIP system achieves better flotation, reducing soil compaction by up to 10.5% and returning a 5% higher crop yield compared to a standard wheel. In the case of a standard wheel, the pressure within the tyre is constant, so the footprint of the tyre varies according to the load, limiting the effectiveness of the tyre.

Directly integrated onto the tyre's rim, the VIP system comprises a set of sensors that measure several parameters,

including load, pressure and temperature, and an electronic central processor controlling a compressor and a valve to adjust the pressure. The system automatically senses whether the machine is in the field or on the road and modifies pressure accordingly, inflating on the road or deflating in the field.

The system also detects when, on the same axle, the load on the right tyre is different from the load on the

left tyre. The company says this is particularly advantageous on slopes, where the system can set two different pressures according to data received, maximising safety and ensuring high flotation, a constant footprint, excellent handling and low soil compaction.

The VIP system received a gold medal at the 2017 SIMA Innovation Awards and further developments are expected, including digital interface devices and an app to allow the



The system can automatically adjust a combine harvester's tyre pressures to reduce compaction

operator to have total control of machine set up, footprint area and tyre pressure.