Smart Farming
Improving farm returns.
Enhancing the environment.

Agri Technology Guidance 2022

Agri technology such as automation, sensors, and mobile-phone apps can help decision making, planning and farm management to improve productivity, increase efficiencies to improve the environment and save time, energy and labour costs.

1. Soil Fertility

Precision technology can play a role in improving soil fertility by helping to target nutrients in the right place, at the right rate and at the right time. Low emission slurry spreading and GPS guided fertiliser spreaders can play an important role in fertiliser savings by preventing losses of nutrients to the air and water.

Low Emission Slurry Spreading (LESS)

Low emission slurry spreading equipment, trailing shoe, dribble bar or shallow injectors place the slurry in bands or lines on the ground, rather than the conventional splash plate method which spreads across the surface. LESS methods reduce N losses directly after slurry spreading which can increase the value of slurry, reduce fertiliser costs and reduce the impact on the environment.

LESS combined with the correct timing of application has been shown to decrease ammonia emissions by up to 30% compared with splash plate application.

Under the Nitrates Action Programme 2022-2025, Low Emission Slurry Spreading (LESS) will be phased in as a mandatory requirement for farmers with the following stocking rates:

Farm Stocking Rate	LESS Mandatory from:
> 150 kg N/ha	January 2023
>130 kg N/ha	January 2024
>100 kg N/ha	January 2025

Global Positioning System (GPS)

GPS systems can be used for slurry and fertiliser spreading, and ensure that there is no overlap during the application process saving money, resources and time.

The advantage of the GPS spreader is that it automatically adjusts the calibration and flow rate allowing more accurate control of the application rate and amount of fertiliser applied.

GPS can also be used for mowing, reseeding and spraying and can also be used for more accurate soil sampling

Soil Fertility Apps

Farm Eye Soil Mate

Soil Mate allows the user to trace every soil test by GPS to the field where it was sampled. https://play.google.com/store/apps/details?id=farm.eye.soilsampler

Fertiliser P and K calculator

The Fertiliser P and K calculator was developed by the Fertilizer Association of Ireland and provides guidelines for Phosphorous (P) and Potassium (K) application.https://play.google.com/store/apps/details?id=com.faoi.pkfertilizercalculator

2. Carbon Calculators

Carbon calculator can be used to calculate your farm's carbon footprint, the estimated amount of greenhouse gas emissions produced by your farm or your farm's Carbon Balance the balance of carbon emissions compared to carbon removals.

Agrinewal

Agrinewal provides a carbon balance sheet and identifies actions which can help reduce farm emissions. https://www.agrinewal.com/

Farmeye

Farmeye carries out soil carbon analysis to measure and monitor the carbon sequestration of soils. https://farmeye.ie

The Cool Farm Tool

The Cool Farm Tool measures farm emissions and soil carbon sequestration. An estimated calculation is given. https://coolfarmtool.org/

Agrecalc

Agrecalc produces a carbon footprint report for a farm, measures the carbon emissions produced and monitors progress. https://www.agrecalc.com/home/explore-agrecalc-mobile-page/

Carbon Harvesters Platform

The Carbon Harvesters Platform monitors farm emissions and provides weekly updated life cycle assessments. https://www.carbonharvesters.com/

Teagasc Forest Carbon Tool

The Forest Carbon Tool estimates the potential carbon storage over the lifetime of your forest. http://interactive.teagasc.ie/Open/ForestryCarbon

3. Grassland Management

Grass Measurement

A supply of good-quality grass throughout the grazing season is key to achieving high levels of animal performance. By measuring grass farmers can increase growth rates, extend the grazing season and improve the quality of grass and silage produced, lowering feed costs.

Manual Plate Meter

Plate meters measure the hight grass under the plate when placed directly on grass. From the height of grass you can calculate the available grass cover.

Electronic Plate Meter

Electronic plate meters have a sensor to measure compressed grass height and automatically calculates cover. Some plate meters like the "Grasshopper" also records the GPS coordinates of the measurement which can be linked back to the PastureBase Ireland database.

Virtual Fencing

Virtual fencing uses GPS devices on collars to contain animals within an area. If the animal passes the virtual fence line, an electrical pulse is applied. Virtual fencing can be used in a rotational grazing system.

Grassland Management Apps

FieldMargin

Fieldmargin allows the user to map fields, plan and record observations. https://fieldmargin.com/

PastureBase

Pasture Base Ireland (PBI) allows the user to manage grass production and utilisation. It provides daily updates on grass growth across the country and provides tools to help match nitrogen supply with grass demand. https://pasturebase.teagasc.ie/V2/login.aspx

FarmGRAZE

The FarmGRAZE app helps users manage grass levels and is designed to make full use of grass and save money on feed and fertilisers. https://www.mobilefarmapps.com/farm-graze.html

4. Time and Labour Savings

Robotics and Automated Systems

- Automatic scrapers, cleaners and vacuums can reduce workloads and maintain good hygiene standards in animal housing.
- Robotic milking systems:
  - Reduce labour input and increase time to focus on management tasks.
  - Provide increased knowledge of cow performance.
  - Improve udder health due to more frequent milking.
  - Provide a more relaxed milking environment.
  - Automated feeders can help save on feed costs by ensuring livestock receive the correct amount of feed depending on milk yield, live weight gain or stage of gestation.
  - Automatic gates, drafting units and ID collars can save time and labour moving and separating stock.

Sensors

- Calving sensors monitor a cow's contractions to determine when she will most likely calf. Sensors can send a phone notification prior to calving which can save time on observation and prevent calving complications.
- Heat sensors can be used monitor the herd to determine when a cow or heifer is in heat. Accurate heat detection can improve conception rates, shorten the calving interval and save time observing livestock.
- Sensors can monitor the health of a cow, notifying the farmer of a potential health issue before visual signs may become apparent. Early detection can result in less serious health issues and reduced use of antibiotics as other treatments may suffice when administrated earlier.

5. Farm Management Systems and Useful Apps

Grass2Milk

Grass2Milk allows users to see whether dairy cows are being adequately fed to reach daily milk and body condition score targets and allows for the planning of daily feed allocations. https://www.grass2milkco.com/

Herdwatch/ Flockwatch

Herdwatch allows farmers to register calves, record dates, feed purchases, weights and animal movements. Flockwatch has been developed for sheep farms. The app is fully approved by the Department of Agriculture and compliant with Bord Bia Sustainable Dairy Assurance Scheme (SDAS) guidelines. https://herdwatch.ie/

Agrii Seed rate calculator

Useful app for calculating seeding rates https://www.agrii.co.uk/calculator-tools/seed-rate-calculator/

BASF GAI

Provides measurement of green area index for winter oilseed rape crops. https://www.agricentre.basf.co.uk/en/Services/Online-Tools/OSR-GAI-Online/

Syngenta BYDV Assist

Helps with decision making on Barley Yellow Dwarf Virus Risk https://www.syngenta.co.uk/agronomy-tools/BYDV-assist

Online Mart Auctions

Mart Eye allows farmers to view mart auctions online and purchase livestock and machinery from their homes. The app can live stream mart auctions from 16 marts in Ireland.https://www.marteye.ie/

LSL Auctions

LSL Livestock Live is an online auction platform which allows buyers and sellers of livestock to trade animals online https://www.livestock-live.com/Locations-Livestock.

Met Éireann Mobile App

The app uses your GPS position to provide a 7-day detailed forecast for your exact location. https://play.google.com/store/apps/details?id=net.fusio.meteireann&hl=en_IE&gl=US