

## **Linking the Plough to the Stars in the 21<sup>st</sup> Century**

**By Bernie Leahy, B&T Drystock Adviser, Teagasc Galway/Clare**

When John Bowman, RTE Radio 1 interviewed Neill Armstrong in July 2009, he asked him to recall his memories on that Apollo 11 Mission to the Moon in 1969.

Armstrong recalled his feelings on seeing the Earth shrinking away from the spaceship. The steely astronaut gripped himself in the face of the unknown and said to himself “There is no going back”. With that he made his “Giant leap for Mankind”.

In this 50<sup>th</sup> year since man first landed on the Moon, agriculture world -wide has developed from the benefits of satellite technology. This space technology has given huge information on weather systems, weather forecasting, geo mapping, land digitisation and precision agricultural practises. Geo satellite systems are being used where space based satellites transfer information back to earth to the benefit of improving crop production systems. Advances in technology are helping farmers to develop Apps on their phones where they can readily access programmes such as Grass 10 where grass measurements can be sent directly to a laptop or home computer from the field. This enables the farmer to make efficient use of his time and grassland husbandry on site.

New precision agricultural tools can be described as remote sensing. Giant cameras in space are constantly recording as they orbit the earth. This technology enables, for instance, a cereal farmer to assess a crops performance remotely by having GPS systems installed in tractors. The tractor will be able to discern where a pesticide treatment is needed and therefore only sprays when necessary. Environment and economics benefit, thus making this technology very sustainable.

Digitising of Irish farms started in the 90's and the Department of Agriculture have gained boundless information by mapping Ireland's land area of forestry, highlands, lowlands, bogs, lakes, rivers and even drains. Lineal measurements are available from BPS mapping systems on watercourses, hedges and environmentally sensitive areas associated such as commonages, lakes and boglands. The uses of satellite imagery enables the Department of Agriculture validate farmer's Basic Payments System, Greening and Area of Natural Constraints payments each year. Inspections are now being carried out remotely to ensure that farmers are complying with standards of EU Cross Compliance schemes.

A new Roscommon based agri-tech company, Farm Eye, founded by a local Agricultural Consultant, a local Food Entrepreneur and a software engineering expert are a good example of how digital technology can be used to show the benefits of traceability of a meat product produced on pasture. This newly formed company aims to provide two main services to its customers as follows;

- 1) Traceability of the pasture based product for large food processors and supermarkets and
- 2) Providing farmers with valuable agronomic production information about their farms.

This company has received funding from Enterprise Ireland and NUI Galway and hopes to employ ten people in ten years' time. Field trials are underway where a digital soil testing system Soil Mate is used which uses GPS and barcoding as identification systems of where a food product is produced.

Another agri-tech company, Apis Protect, uses a sensor system to monitor the health of honey bees by collecting vital data on humidity, CO<sub>2</sub>, sound and movement of bees via an Apis Monitor.

Farming and agri-tech companies have used wireless sensors to transmit data about animal health and milk yields to a central computer device via remote sensing. One established company, Moocall sends a message via sensor warning that a cow is about to calve via a text message system.

In Ireland European Space Agency Satellites are being used to determine soil moisture, grass growth and many indicators which help researchers and farmers to make informed decisions on grassland management, eg the Teagasc Grass 10 Programme, Fertiliser planning eg (Teagasc Nutrient Management Plan Online System NMP) disease monitoring eg. Potato Blight forecasting system and cereal crop fungicidal advice systems. Remote Sensing systems also enables data collection in observing high nature value habitats and to give guidelines on how to protect habitats being destroyed by climate change and destructive manmade practises such as deforestation and deliberate vegetation burning. European Space Agency satellites also play a role in alerting government agencies on upland fires and lowland flooding so that emergency response units can be alerted to reduce damage to areas affected in time. Remote Sensing as a tool for world policy planning is the only way to get regular updates on agricultural land use worldwide. World leaders need to work together to use Remote Sensing technology for the benefits of feeding the extra 2 billion people predicted to be on our planet in 2050.

Niall Armstrong, in taking that “Giant step for Mankind” 50 years ago, sowed the seed for our future survival. The Astronaut steering the Apollo 11 Space Craft was Michael Collins, an Irish American, who had a Rahara, Co. Roscommon ancestral connection.

So let the Irish entrepreneurial spirit live on!

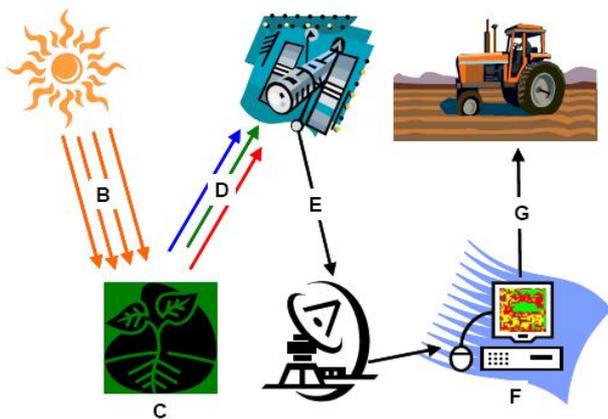


Figure 4. The remote sensing process.

**Caption “Linking the Plough to the stars in the 21<sup>st</sup> Century”**