LEADER
Community-Led Local Development

National Rural Network

LEADER 2014-2020 NRN CASE STUDY

Project name: Purchase of Specialist Unmanned Aerial Vehicle (UAV) Surveying

Date: April 2017 to March 2018

Local Action Group: Laois Local Community Development Committee

Implementing Partner: Laois Partnership Company

Type of Beneficiary: Small Medium Enterprise (SME)

Priority & Focus Area: Theme 1: Rural Economic Development, Enterprise Development and Job Creation/Sub theme: Enterprise Development

Project Beneficiary Name/Organisation: Aerial Agri Tech

Address: Portlaoise, Co. Laois, Ireland

Further information: http://www.aerialagritech.ie/ Aerial Agri Tech (@AerialAgri) / Twitter

Purchase of Specialist Unmanned Aerial Vehicle (UAV) Surveying Unit

Summary

Aerial Agri Tech uses a range of earth observation platforms and image processing technology to provide clients with a unique insight into their environment. The company was established in 2015 and provides services to a range of market sectors, such as agriculture and forestry, allowing them to achieve the highest levels of productivity using their technology. In order to enhance their service offering, LEADER supported Aerial Agri Tech to purchase a suitably equipped light weight Unmanned Aerial Vehicle (UAV) drone capable of capturing high resolution aerial imagery. This enabled Aerial Agri Tech to provide a complete remote sensing service.

Context

Aerial Agri Tech is an innovative start-up business established by Cian Gallagher in 2015. Cian has strong skills and experience in applied Geographic Information Systems (GIS) and remote sensing. GIS is a software tool which allows for the analysis and mapping of location-based information, such as vegetation types. Remote sensing uses this data, collected from sensors on airplanes or satellites, which is then analysed using GIS. Cian identified a gap in an emerging market and had the correct skillset to capitalise

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Aerial Agri Tech Logo - Source: Aerial Agri Tech

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on this and build his business 'Aerial Agri Tech' surrounding this gap.

LEADER funding was used to support the purchase of a UAV drone, enabling the business to provide a complete remote sensing service. UAVs provide a unique style of scientific observation and data gathering which remains a niche technology within the Irish market. Its usefulness has been well documented in other EU countries, throughout a range of industries, and can be applied in Ireland to provide technical data support within agriculture and other sectors. There are no competitors within the region which provide a comparable service in remote sensing with vegetation/crop analysis.

Aerial Agri Tech is registered with the Irish Aviation Authority (IAA) and works in accordance with its regulations on using UAV drones to take still images. The vast majority of drone operators currently registered with the IAA are in the media industry. The use of drones for specialist land surveys is still in its infancy in Ireland. More broadly, this type of technology is relatively new to the Irish market with initial legislation only introduced in 2012 to govern the use of UAVs.

Cian Gallagher founder of Aerial Agri Tech – Source: Aerial Agri Tech

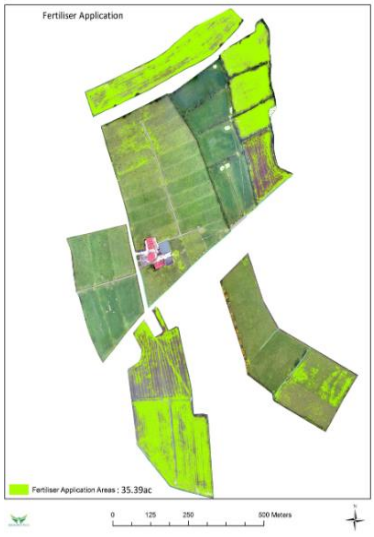
Aerial Agri Tech is also a member of the Unmanned Aircraft Association of Ireland (UAAI). The UAAI promotes the safe and legal use of drones across Ireland. Under the UAAIs code of ethics, all members commit to flying aircraft in a manner which promotes their positive use and impact, whilst flying them legally and safely.

Objectives

- **Purchase a suitably equipped light weight Unmanned Aerial Vehicle (UAV) capable of capturing high resolution aerial imagery in the most efficient manner**
- **Enable Aerial Agri Tech to provide a complete remote sensing service**

Activities

Working closely with the Laois Partnership Company, this project has facilitated Aerial Agri Tech to invest in specialised drone equipment and increase its service offering to clients. Before its purchase, the company relied on satellite imagery. Now, the company can combine satellite imagery with high resolution aerial imagery captured using the UAV. In relation to the agricultural sector, the company can now provide clients with in-depth analysis on the distribution, health status and productivity of their crops, along with giving precise area measurements and help in developing precision agriculture.



Farm survey of fertiliser application by Aerial Agri Tech- Source: Aerial Agri Tech

Services also extend to the forestry sector. These can include measuring forest disturbance, as well as doing parameter assessments which can enable more effective forestry management.

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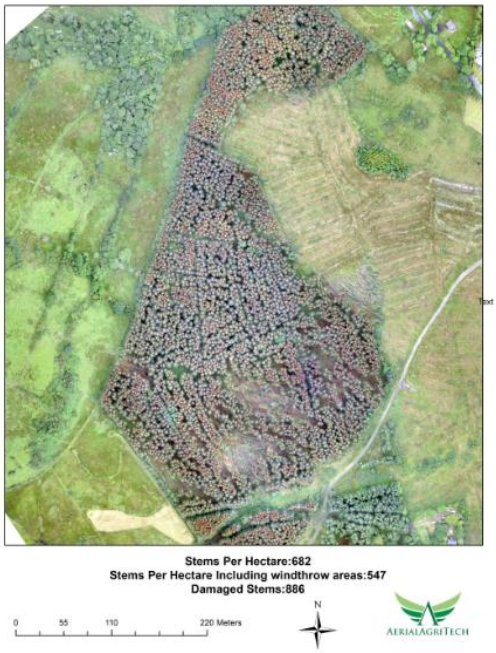
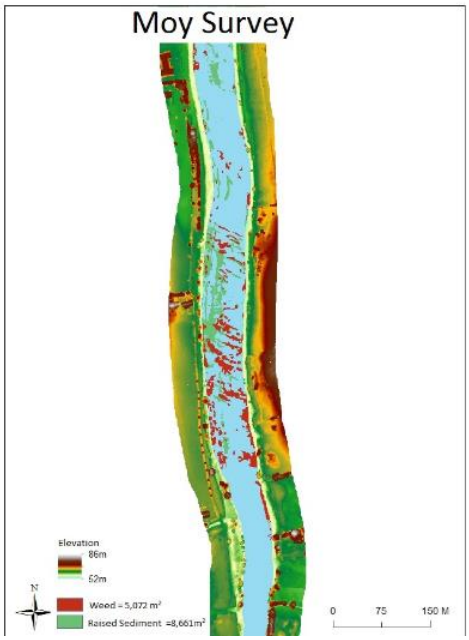


Forest disturbance survey by Aerial Agri Tech – Source: Aerial Agri Tech

A particular drone was purchased based on its suitability to the Irish environment and climate as well as the service provision needs of Aerial Agri Tech and its target markets. The eBee Ag drone also came with a good support system which provides immediate back up and technical support as required.

Aerial Agri Tech Logo and the new Ebee Drone - Source: Aerial Agri Tech

Bespoke software was provided as part of the overall drone package and the drone imagery is processed using this software. Aerial Agri Tech carries out aerial inspections of clients' land using the UAV and in-depth analysis of imagery obtained using imagery analysis software. Multi-sensor cameras capture high resolution imagery which allows for in-depth analysis of vegetation. Processing technology generates 3D images which provide high resolution data used to calculate volume and depth.



Survey of the River Moy - Source: Aerial Agri Tech

Prior to the purchase of the eBee Ag drone, to test its suitability and validate its application in Ireland it was used as part of an extensive survey of the river Moy. This river is a top location for salmon fishing and is very popular among anglers. However, pond weed is increasingly an issue and Aerial Agri Tech carried out a detailed survey of the river to assist in the evaluation of the extent of the problem.

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"The Unmanned Aerial Vehicle (UAV) surveying unit is an integral part of the company and a vital tool. Almost every survey that is carried out by Aerial Agri Tech involves use of the UAV. For example, the applications are particularly important to the forestry sector in Ireland. The data embedded in the UAV imagery such as species number, productive area and tree height is proving particularly valuable" ***Cian Gallagher, Aerial Agri Tech***

Results

The LEADER grant has enabled this start-up business to take key steps forward in its development. This project has enabled the business to scale – up its operations with a 50% increase in turnover because of the additional services it now can provide using the UAV. It also expects continued growth and was awarded the Competitive Start Fund from Enterprise Ireland to develop a software platform targeted towards specific client groups so they can access their data where it safely and securely stored.

Unemployment is an issue for the rural region in which this business is based. Supporting innovative businesses, like Aerial Agri Tech, to create new employment opportunities is an important local development goal. Through this project, 1 job has been sustained and Aerial Agri Tech aims to create an additional position's in the future.

The surveying services provided by Aerial Agri Tech are not widely available in Ireland and can facilitate development of other industries, such as solar farm planning. Aerial Agri Tech provides a service facilitating the emerging solar farm planning industry in Ireland.

Aerial Agri Tech is pioneering the application of drone technologies for surveys in aquatic environments in the Irish context. Its approach to surveying aquatic environments is cutting-edge. This includes using specialised sensors to identify weed beds for river management plans and drone sensors to provide underwater elevation profiles. The company is pioneering the combination of satellite and drone imagery to give insight into forest environment damage for insurance companies. It provided surveys of forestry environment damage following 5 storm events in Ireland from 2017 to 2018. This included assessments of 25 sites in the north-west of Ireland in the summer of 2018.

Aerial Agri Tech has also carried out surveying work on a number of community projects, particularly in developing feasibility studies and development plans. This includes involvement on the 'Erkina Blueway Project' in Durrow county Laois, whereby a local kayakers group, 'Woodenbridge Paddlers' are aiming to develop a blueway on the Erkina River. As part of the feasibility study Aerial Agri Tech used the drone to assess the viability of developing a blueway, by measuring the volume of weed and sediment in the river as part of the Environmental Impact Assessment (EIA). Another project is the Kilminchy Green Infrastructure Plan. A residents group in Kilminchy Estate is developing a green infrastructure plan for their estate which extends to some 13 acres. As a first step, the ecological consultancy working on the plan commissioned Aerial Agri Tech to run a drone survey in order to generate a topographical plan for the area.

Lessons

Newly emerging markets

Aerial Agri Tech is tapping into newly emerging markets by capitalising on the emergence of new technologies. The value of applying drone technology in carrying out land-based surveys is not yet well-understood in the company's target market sectors in Ireland. Therefore, an important part of the broader work in developing this start-up business has been demonstrating the value and applications of using drone technology.

Higher quality data

A key value of drone imagery is its high resolution and the quality of data which can be extracted from it. Satellite imagery can provide data at a broader scale and is still useful, but in combination with the micro perspective greater detail and accuracy can be captured.

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Supporting the rural economy

This project represents an enterprise that supports the diversification of the rural economy, by harnessing an emerging opportunity provided by new technology. It can also help to support the potential within other sectors of the rural economy, such as agriculture and forestry through supporting data driven decision making.

Funding

Total project budget (i)+(ii)+(iii) =	**€24,500**
+ (i) Rural Development Programme support (a)+(b)	€12,250
+ (a) *EAFRD (EU) contribution*	€7,693
+ (b) *National / Regional contribution*	€4,557
+ (ii) Private / Own funds	€12,250
+ (iii) Other funding sources	€n/a

Contact details

Project beneficiary name	**Aerial Agri Tech**
Contact person	**Cian Gallagher**
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Address of beneficiary or implementing body	**Portlaoise, Co. Laois, Ireland**

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