eip-agri
AGRICULTURE & INNOVATION

Dr. John Gilliland

Devenish, Ireland

20-21 October 2020

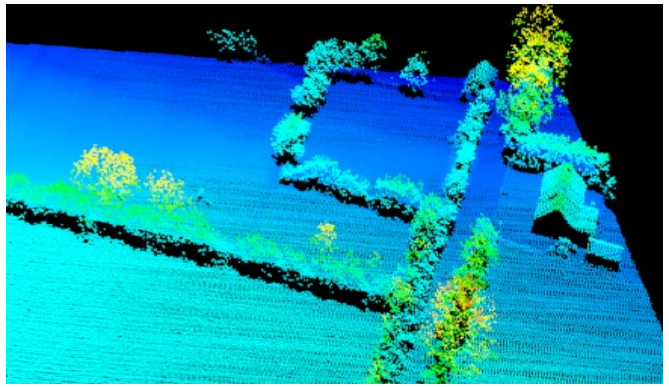
EIP-AGRI Workshop Shaping the EU mission 'Caring for soil is caring for life'

The Devenish Lands at Dowth – The Irish Lighthouse Farm

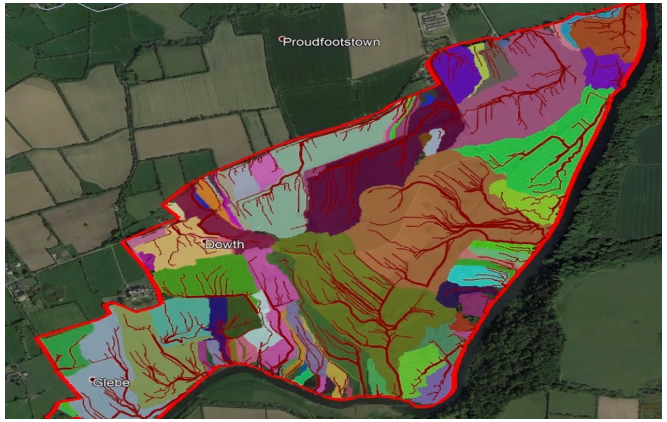
Delivering Carbon Neutral Beef & Lamb by 2025, while driving Profitability

Purchased in 2013
185 ha, Grassland Farm

Delivering Soil Improvement
Fertility & Health



Measuring Carbon Sequestration,
Above & Below Ground



Reducing Over Land Flow
Nutrients & Soil

Optimising Biodiversity
Ireland's Top Mammal vis a vis Trees

Managing UNESCO World Heritage
Site, 6,000 yrs of farming evolution

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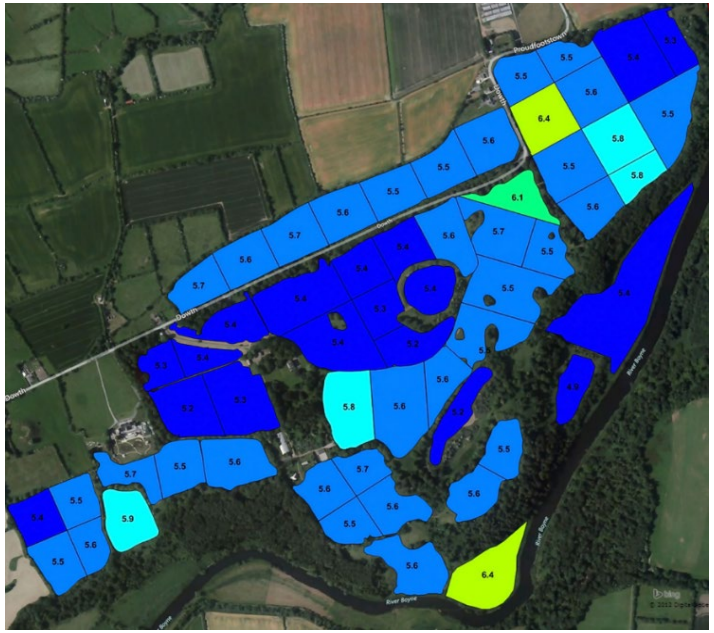
GLOBAL NETWORK OF
LIGHTHOUSE FARMS

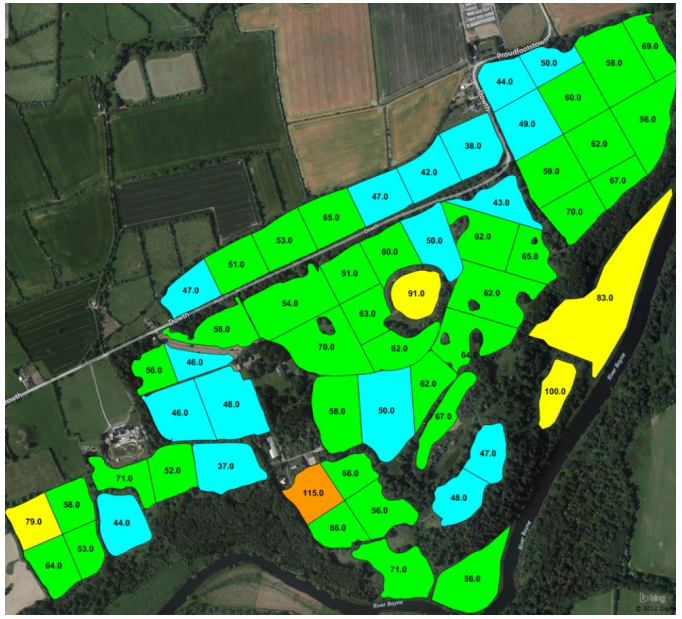
Created Robust GPS Baseline on Soil Fertility

25 soil cores from 2 ha, virtual land parcels, analysised

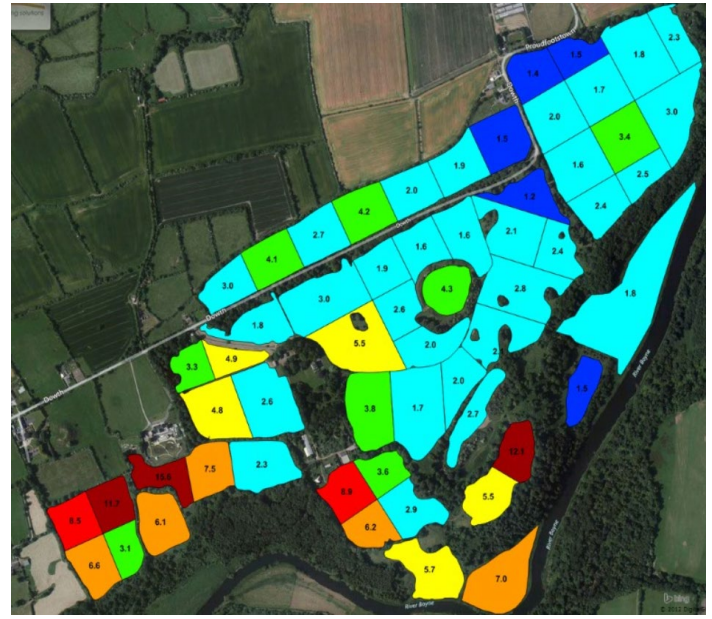
Feb. 2014
Average pH 5.5



Feb. 2014
Average K Index 2-



Feb. 2014
Average P Index 1+



Very poor soil fertility, after 40 years of neglect

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FARMTECH SOLUTIONS

Created Robust GPS Baseline on Soil Carbon

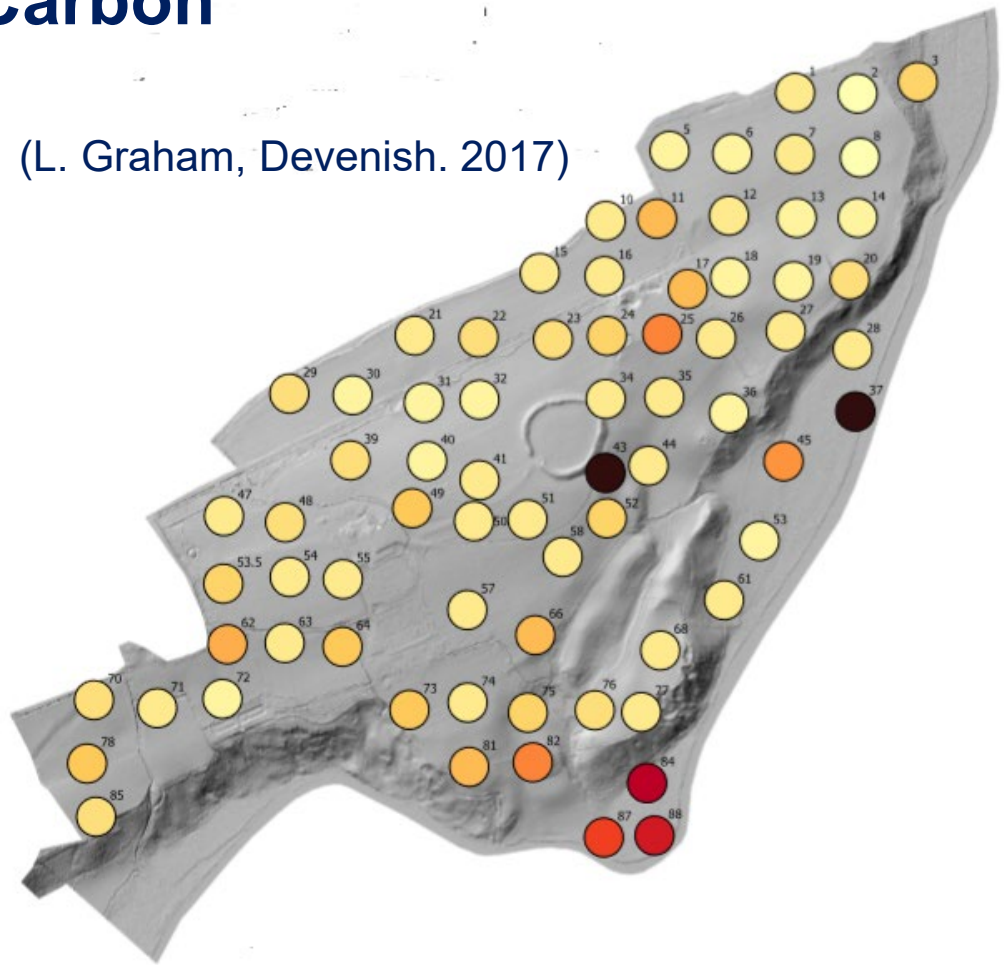
(L. Graham, Devenish. 2017)

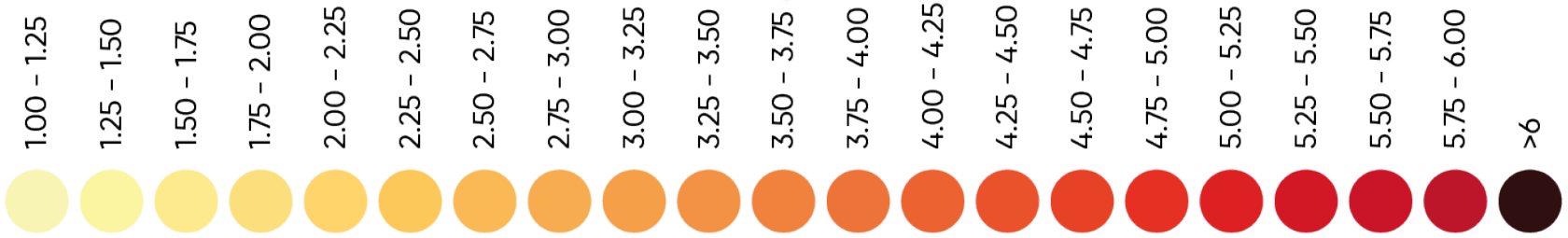
Representative Sampling of Soils under Grass
Soil A Horizon sampled to 30cm in 88 soil pits

No ploughing for 40 Years
Some land never ploughed
Soil Type – Brown Earth

Average Soil Carbon - 2.1%
Expected Soil Carbon – 4 to 5%

Why the disparity in Soil Carbon Levels??





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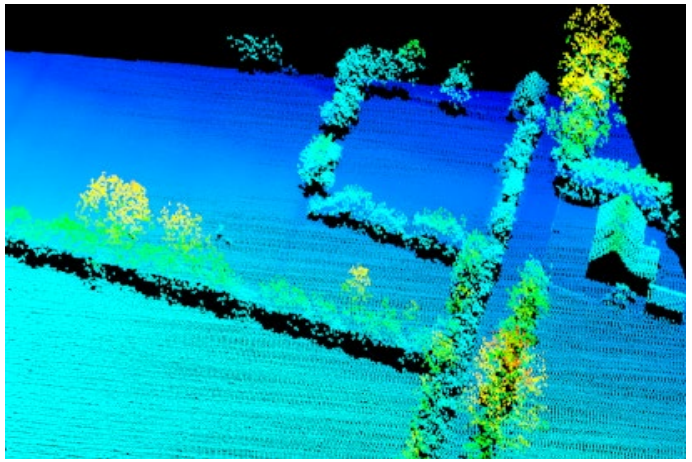
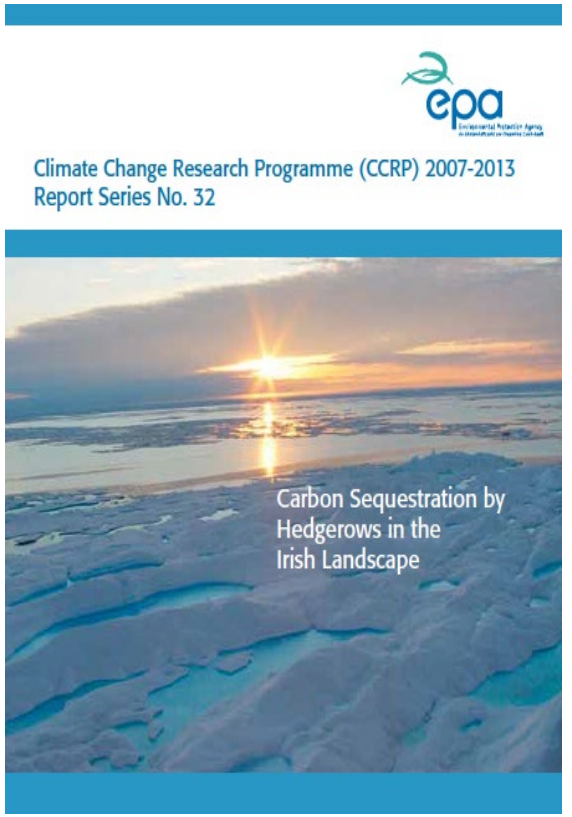
Created Robust GPS Baseline of Carbon in Trees & Hedges

Aerial LiDAR Survey to measure Biomass Density/Carbon



	Woods	Hedges	Total
Biomass Density (t C/ha)	83	127	86
Total Biomass in Dowth (t C)	3495	385	3880
Sequestration Potential for Dowth (t C/Yr)	50	1.2	51



S. Green, Teagasc, 2014

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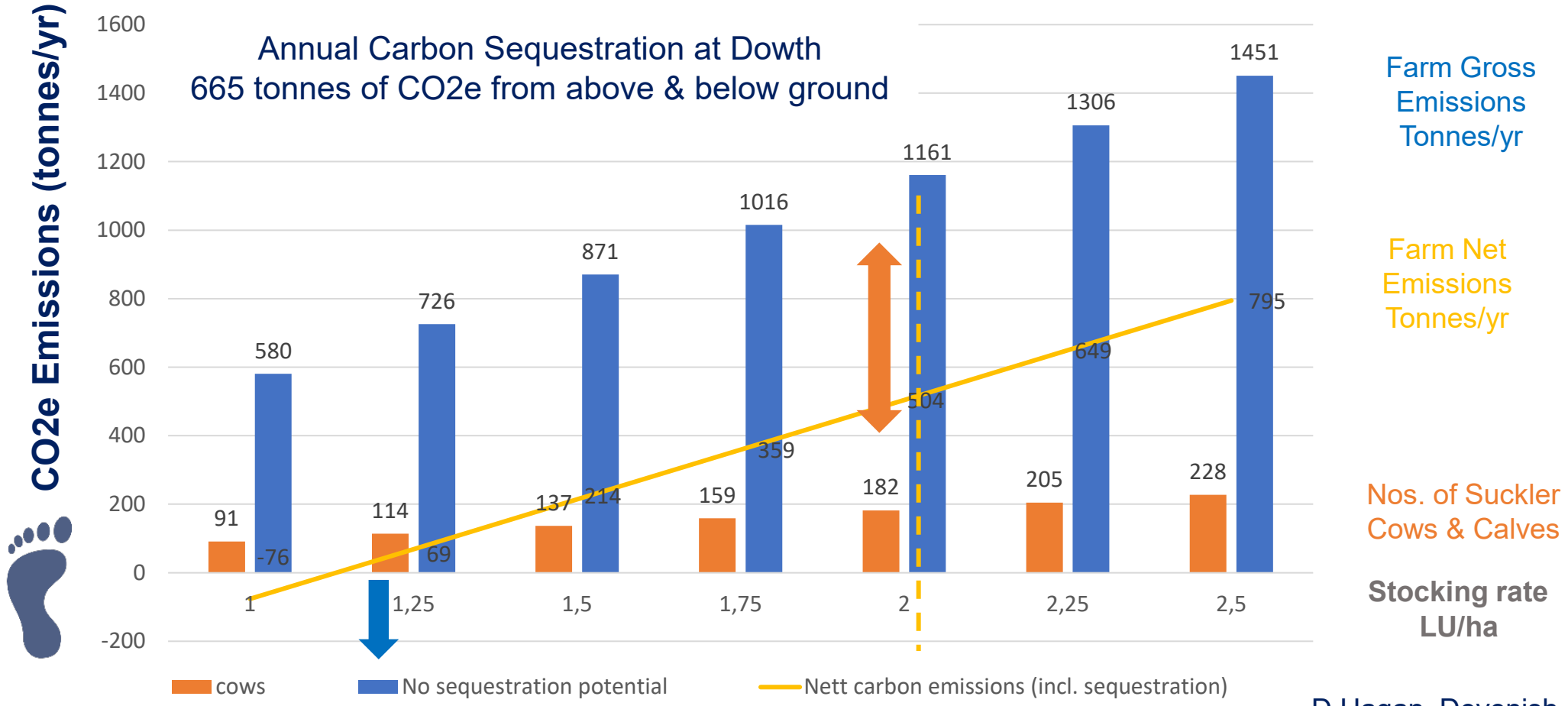
teagasc
Agriculture and Food Development Authority

Sensitised "Net Farm" GHG Emissions to different Stocking Rates

Suckler Cows & Calves, Grazing System, on 91 ha of Grass, at Dowth



D.Hagan, Devenish, 2018

At Stocking Rate of 2 LU/ha

Dowth's Sequestration displaces 56% of all GHGs emitted by Cows & Calves

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Accelerating Sequestration - Improving our Soils by correcting Soil pH

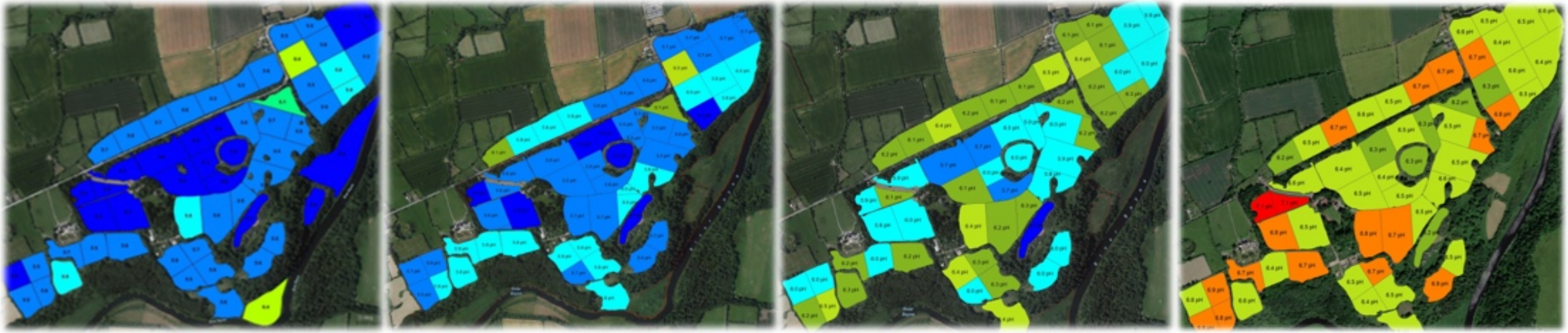
Through disciplined precision, GPS, Biennial, Soil Sampling & Analysis, every 2 Yrs

Feb. 2014
Average pH 5.5

Feb. 2016
Average pH 5.7

Feb. 2018
Average pH 6.1

Feb 2020
Average pH 6.6



Above 7.0 pH
6.7 - 7.0 pH
6.4 - 6.6 pH
6.1 - 6.3 pH
5.8 - 6.0 pH
5.5 - 5.7 pH
5.0 - 5.4 pH
Below 5.0 pH

Delivered Credible Transparency of Soil Improvement through the use of regular Precision, GPS, Soil Sampling & Analysis

Dowth Soils now at Optimal pH after only six years!!

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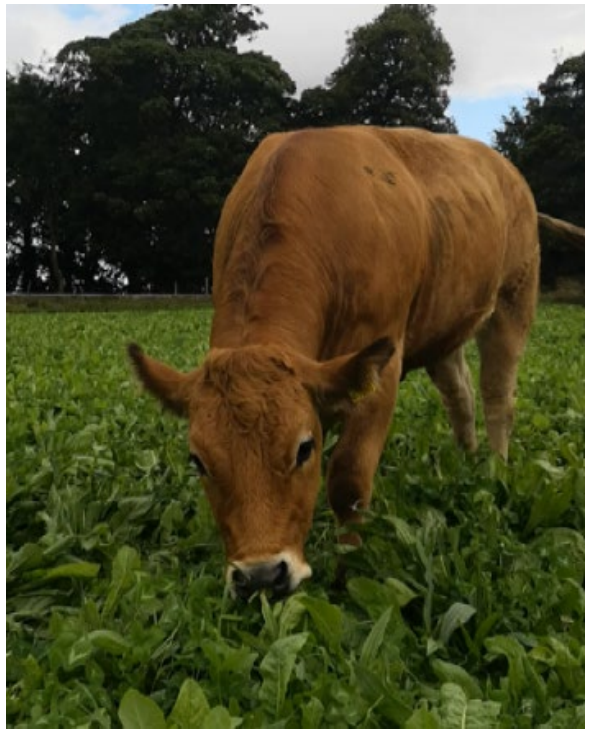
Accelerating Sequestration using our Multispecies Swards “Living Lab”

HEARTLAND
ONE HEALTH FROM SOIL TO SOCIETY

– An EU Marie Curie Award for the Optimisation of Multi Species Swards to improve Profits, Soil & Human Health, Simultaneously

- €1.4m Research Project
- Five PhD Researchers recruited
- 36 ha trials established
- 4 different Sward Compositions
- Co grazed with Cattle & Sheep



Partners:

WAGENINGEN UNIVERSITY & RESEARCH

UCD DUBLIN

UNIVERSITY OF GLOUCESTERSHIRE

Bord Bia
Irish Food Board

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Benefits of membership of the Global Network of Lighthouse Farms

Facilitated by Farming Systems Ecology Group, WUR, The Netherlands

- Learning & Sharing from each other, both from within & beyond the EU
- Inspiring Innovative impact by mixing Academia, Practitioners & Scientists

- Accelerating Positive Improvements through "farmer to farmer" learning
- Building Partnerships & developing Friendships

https://www.lighthousefarmnetwork.com/

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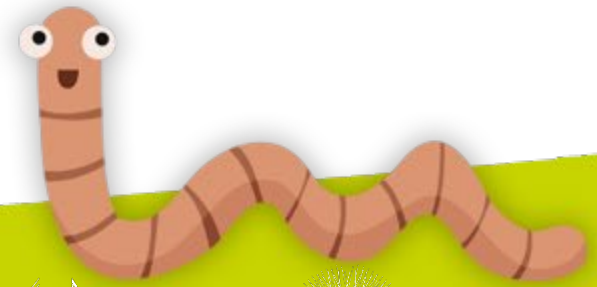
GLOBAL NETWORK OF
LIGHTHOUSE FARMS

EIP-AGRI workshop
Shaping the EU mission
'Caring for soil is caring for life'

Online 20-21 October 2020

All information of the workshop is available on
www.eip-agri.eu

on the event webpage
https://ec.europa.eu/eip/agriculture/en/event/eip-agri-workshop-shaping-eu-mission-soil



funded by European Commission