



The Agricultural Catchments Programme:

A Living Lab approach to improving water quality in Ireland

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Agriculture and water quality in Ireland

- 56% of Irish land is used for agriculture (93% Grassland and 7% Arable)
- 2013-2018 (EPA, 2019): 53% of surface water bodies and 92% of groundwater bodies were in good status
- But, a worrying increase in poor status surface water bodies (EPA, 2019)
- Agriculture and waste water have been found to be the main sources of nutrient losses to water

The challenge

We need to find ways to reduce the impact of agriculture on water quality while allowing farmers to make a living

Agricultural Catchments Programme

- ~~Funded by our Ministry DAFM (2008 – on going), hosted by Teagasc~~
- Collaborates with >300 farmers across 6 catchments
- ~~Combines biophysical, socio-economic research & Knowledge Transfer~~
- Objectives:
 - i. Measure the effectiveness of the Good Agri Practice at catchment scale
 - ii. Evaluate the efficacy of the nitrates derogation (increased stocking rates)
 - iii. Provide scientific basis for policy reviews, with a view to adopt modifications where necessary
- 4th cycle (2020-2024) includes gaseous emission/carbon sequestration

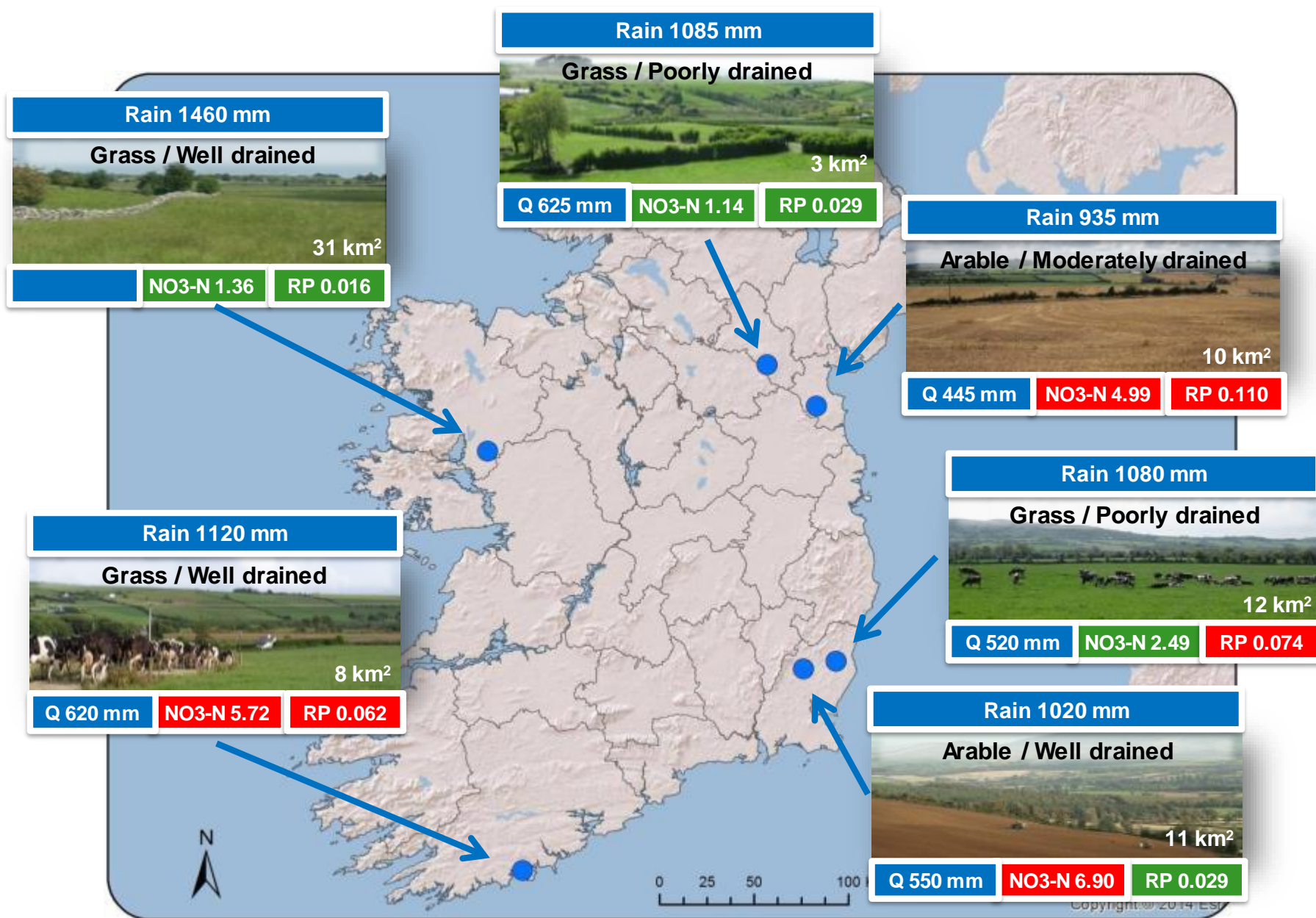
Find ways to farm that farmers will accept and that will improve water quality, and provide the evidence to support this model of farming

ACP activity

- Research and science dissemination
- Contribute to policy with science in collaboration with stakeholders
- Collaborate & host research projects, e.g. WaterProtect
- Training: PhD students, visiting students and specialist advisors
- One-to-one/ group advisory service: agriculture, finance & environment
- KT Groups, Discussion groups, Public events & Farm Walks



Catchments: 10-years of water quality monitoring



Experimental design

Conceptual framework

Hugely detailed, rigorous science being undertaken.
Needs more than passive co-operation – it needs active involvement and ownership by the farmers

Source & Mobilisation

Transfer

Delivery

Impact



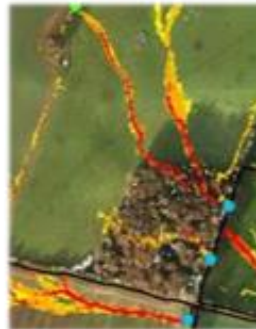
Farm management



Soil sampling



Weather



Surface pathways



Below ground pathways



Continuous water quality & quantity



Ecological survey

Some findings

- Efficient & targeted measures are needed: requires good uptake by farmers
- Continuous monitoring has given an understanding of when, where and how the pollutant is mobilised and transferred to water. This can be up-scaled to other areas using national data sets and to understand trends
- There are no “one size fits all” solutions due to different catchment typologies based on e.g. soil/bedrock permeability and chemistry
- Different dominating pressures: i) source; ii) mobilisation and iii) transport
- Overriding climate pressure, long-term changes & short-term extremes



Farmer interaction with ACP

- 300 + farmers & 4 advisors
- one to one and group advisory service
- Agricultural, financial and environmental
- Knowledge Transfer Groups
- Public events and Farm Walks
- Social and traditional media www.acpmet.ie



Farmer Driven Research

- Ireland's Nitrates Directive regulations (GAP) also control Phosphorous (P)
- The GAP regulations prohibited P fertiliser on High P soils
- Generally, crops are unresponsive to P fertiliser when soil levels are high
- Spring Barley growers in the ACP disagree
- 4 years of P fertiliser response trials took place on these farms
- Results supported farmer opinion & were submitted in the NAP review
- Now, 20 kg. P / Ha. Can be applied when soil pH ≥ 7



7 Steps to Improving Farm Sustainability



7. Using the ASSAP advisors to help improve water quality



6. Incorporating forestry and hedgerows on farm



5. Improved energy efficiency and renewable energy



4. Reducing losses from slurry



3. Changing to protected urea



2. Substituting clover for chemical fertiliser



1. Improved EBI and extending the grazing season

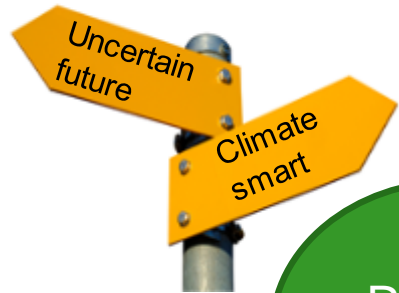
Signpost Farms

A second 'Living Lab' under development to tackle greenhouse gas emissions and improve overall sustainability



Signpost Demo Farms

c75 farms to work out issues with implementation of GHG mitigation measures
Used as signposts to all farmers on how to move towards Climate Smart farming



Real life
setting

**Living
lab**



Multiple
stakeholders:
Farmers
Industry
Res/Adv

Co-
creation



Active user
involvement

Thank you!

