
AgriSearch
NI
Driving Excellence & Innovation

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Balmoral Breakfast
The Last Mile:
Where Research Meets Results

15th May 2024

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Schedule

Time		Speaker / Facilitator
07:30	Arrival	
07:50	Breakfast Served	
08:30	Welcome & Introduction	Jason Rankin (Strategy Manager)
08:35	Turning Strategic Ambitions into reality	Sean Kane (Operations Manager)
08:40	Discussion Panel: (John Egerton, Peter Kennedy, Mark Little, John Martin, Debbie McConnell, Jessica Pollock)	Ian McCluggage (Vice Chair)
09:10	NAP 2026-29 Proposals – Scientific Critique	Dr Sinclair Mayne
09:20	NAP 2026-29 Proposals – Initial Impact Analysis	Jason Rankin
09:25	Closing Remarks	Norman McMordie (Vice-Chair)
09:30	Close	

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AgriSearch

(The Northern Ireland Agricultural Research and Development Council)

- Founded in 1997 to provide a mechanism through which beef, dairy and sheep farmers could have direct involvement in production orientated research
- Registered Charity
- Core funding from levies collected of milk, beef and lamb (~£460K)
- £10M of levy has levered over £70M in total project value

	AgriSearch Levy Rate	AHDB Levy R&I / KE Element (2021)
Dairy	0.02p (~£1.60 / cow)	0.055ppl (~£4.40 / cow)
Beef	30p	£1.81
Sheep	5p	27p

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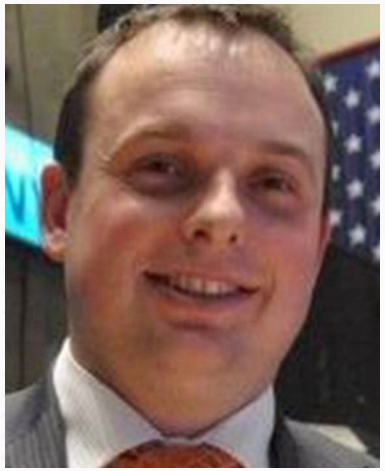
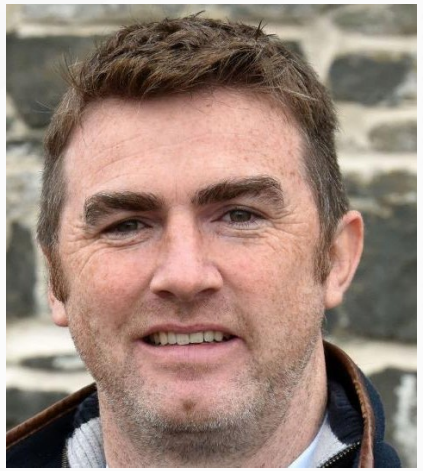
AgriSearch PhD Scholarships

(Farming Industry Funded Doctoral Training Programme)

			
Andrew Cromie	Andew Crawford	Steven Morrison	Eileen McCloskey
Survivability of dairy cattle and the factors which Influence this on the farm	To assess the potential of the Norwegian (NRF) Breed as a means of improving the fertility and health status of the Northern Ireland dairy herd	Achieving high milk production at pasture	Environmental consequences of maintaining ewes in the Hill Sector
icbf AgTech-It's in our DNA!	Dairy Farmer & former Special Advisor	afbi AGRI-FOOD & BIOSCIENCES INSTITUTE	cafre College of Agriculture, Food & Rural Enterprise

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Peter Kennedy	Allison Yeates	Debbie McConnell	Alastair Boyle
Low input forages for beef production	Contribution of meat from grass fed ruminants to the total human dietary intake of long chain n-3 polyunsaturated fatty acids.	Improving nutrient management within intensive grassland based dairy systems	Managing dairy cows to reduce the development of lameness
M&S	Ulster University	Ai SERVICES NORTHERN IRELAND	cafre College of Agriculture, Food & Rural Enterprise

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Anne Richmond	Mark Little	Amanda Dunn	Victoria Murphy
Low input forages for beef production	Environmental implications of livestock grazing on a range of differing LFA environments	Development of immunocompetence from birth to weaning in artificially reared dairy and suckled beef calves,	An evaluation of grouping and housing systems for Northern Ireland beef cattle
Pilgrim's	Fane Valley Growing Better Together	BONANZA calf nutrition	cafre College of Agriculture, Food & Rural Enterprise

AgriSearch PhD Scholarships

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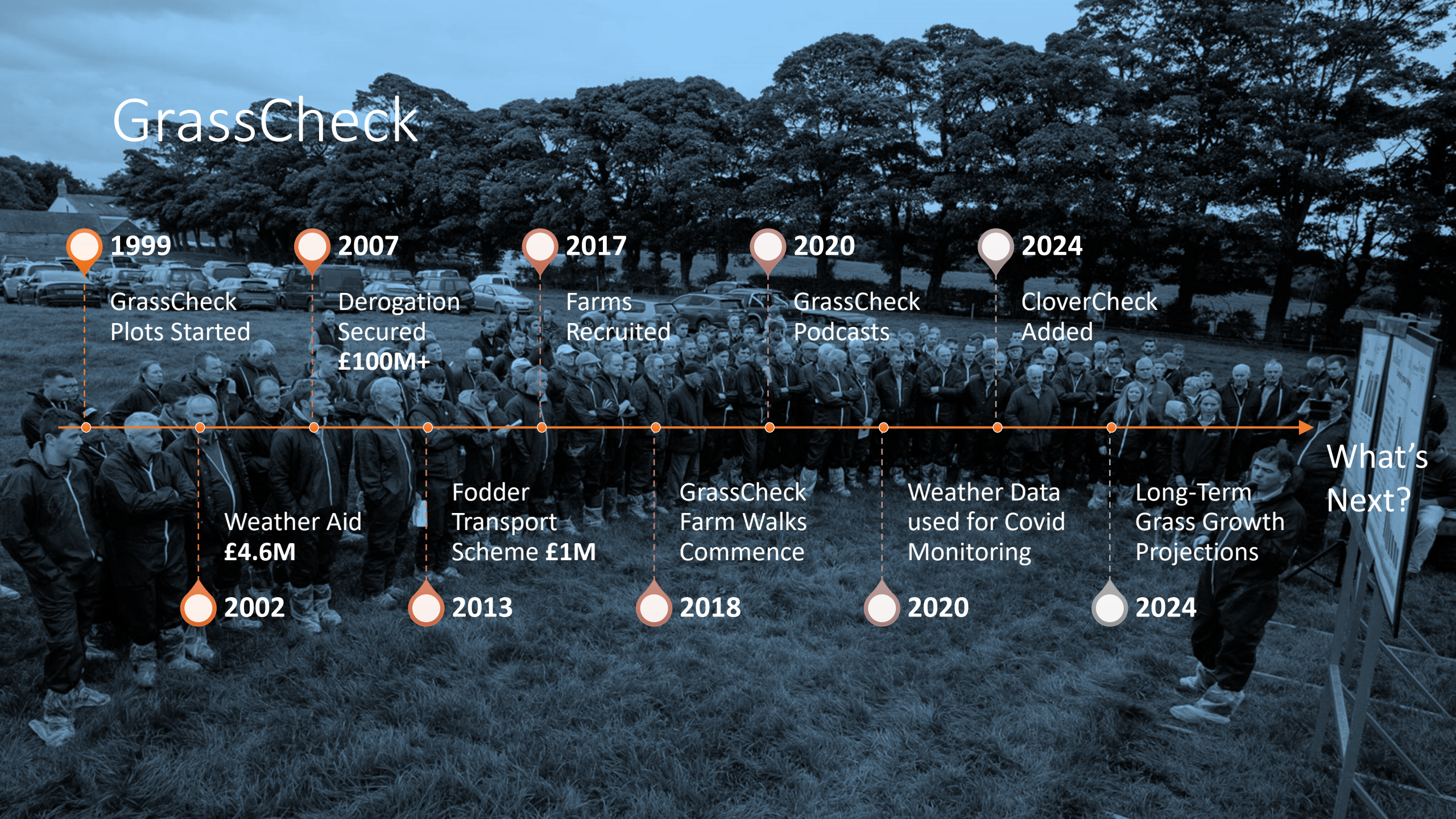
David Johnston	Naomi Rutherford	Lauren Chesney	Jessica Pollock
The role of higher protein forages and home grown protein grains within Northern Ireland dairy systems	Development of systems to improve dairy origin beef young stock health and performance	An evaluation of beef grazing systems and trace element supplementation within suckler beef production,	Investigating the effect of frequency of fresh pasture allocation has on the individual performance of lactating dairy cattle
Fane Valley Growing Better Together	afbi AGRI-FOOD & BIOSCIENCES INSTITUTE	afbi AGRI-FOOD & BIOSCIENCES INSTITUTE	Dairy Farmer


GrassCheck
1999
GrassCheck Plots Started
2002
Weather Aid £4.6M
2007
Derogation Secured £100M+
2013
Fodder Transport Scheme £1M
2017
Farms Recruited
2018
GrassCheck Farm Walks Commence
2020
GrassCheck Podcasts
2020
Weather Data used for Covid Monitoring
2024
CloverCheck Added
2024
Long-Term Grass Growth Projections
What's Next?

Beacon Farm Network

2020/21

Farmer Recruitment

2021 – EIPs

MSS for Beef & Sheep

Anthelmintic TST

Leatherjackets

ARCZero

2022

Soils & Clover Workshops

2024

Carbon Benchmarking

2024

Dairy Carbon Network

What's Next?

2021

Carbon Benchmarking

2022

Seven Case Studies

2023

ZeroNsile

2024

Mycotoxins

2025

CliBeef

Beacon Farm Network

UK-DCN - UK Dairy Carbon Network

Funded by Defra and led by AFBI, as part of a UK-wide consortium.

CliBeef - Climate Friendly Beef

Turning Strategic Ambitions Into Reality

Sean Kane, Operations Manager

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Looking forward >>

>> 2025 - 2030 priorities

Farmers continue to experience unprecedented challenges and as an organisation we need to ensure that our strategic plan allows us to adapt and deliver value for the farming community.

One

Placing the farmers needs at the heart of research and innovation in Northern Ireland

Two

Grow our long-term research and innovation platforms

Three

The Last Mile – Research into practice

1. Placing the farmers needs at the heart of research and innovation in Northern Ireland

PhD Scholarships

Two new PhD Scholarships have recently commenced:

- Rumibase NI: Developing a unified database of the life cycle carbon inventory to encompass all AgriSearch ruminant platforms, as a foundation for a unified database to encompass all NI ruminant farms
- Modelling and Optimising on-farm renewable energy generation and consumption using artificial intelligence

One new PhD getting underway in September:

- Carbon Fluxes in the Uplands and Implications for National Inventories
- Bovis PhD – Recruitment to commence in the near future

- PhD Cost: £135,000

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2. Grow and Develop our Long-Term Research and Innovation

Long-Term Soil Carbon Observatory

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Long-Term Soil Carbon Observatory

- Accurate data on changes in soil carbon stocks/carbon sequestration are essential to ensure Northern Ireland agriculture can demonstrate how it is achieving its carbon reduction targets
- In its current form, data from the DAERA / AFBI Soil Nutrient Health Scheme (SNHS) are insufficient to provide a robust, accurate measurement of soil carbon stocks

- £15,000 per farm

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2. Grow and Develop our Long-Term Research and Innovation

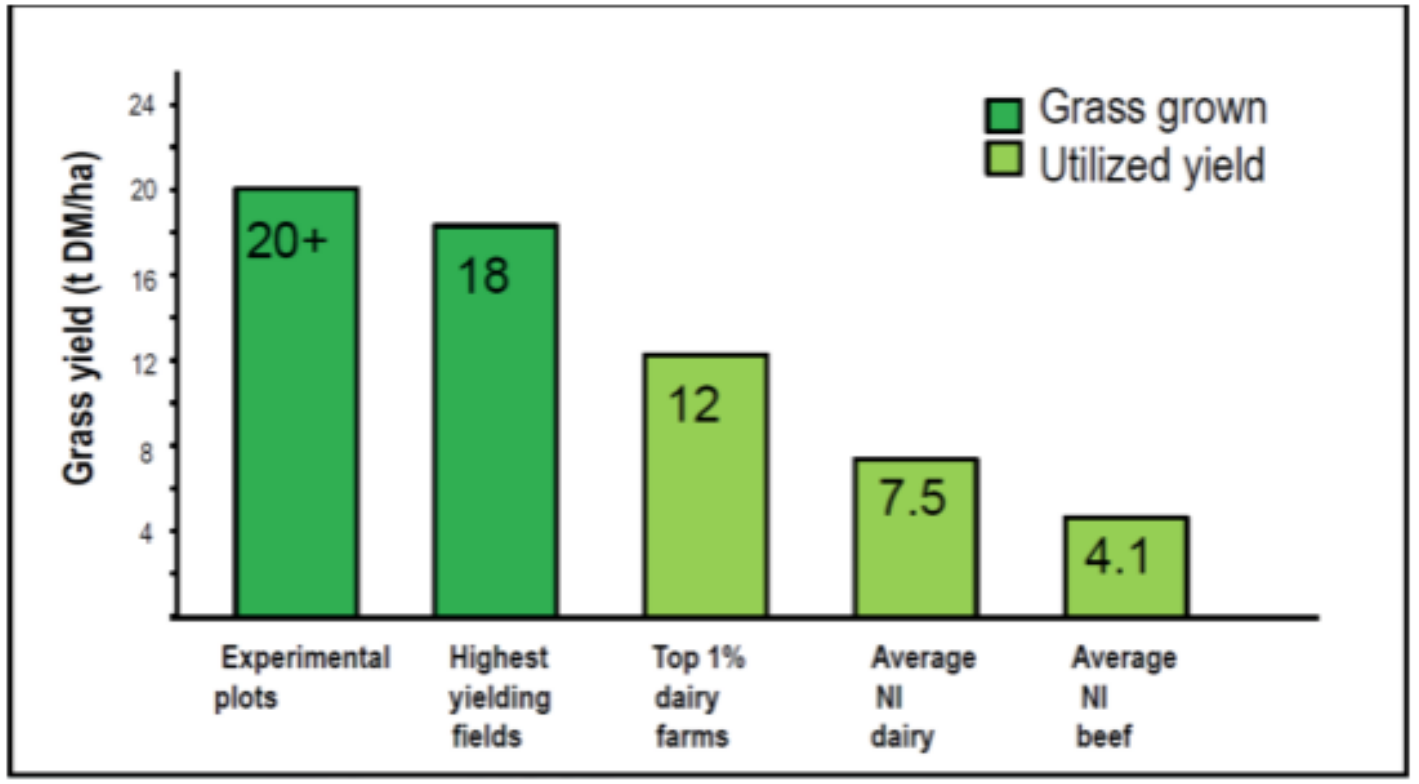
Beacon Farm Network

- AgriSearch
  - ZeroNsile
  - Agrecalc
  - Mycotoxins
  - Sheep Genotyping
  - Fertiliser price increases impact assessment
  - **NAP impact assessment**
- Partnerships

Tough decisions to manage the drought

Over 200 farmers attended the AgriSearch farm walk on the farm of Paul and Frank Turley at Downpatrick. Tom Morrow reports

3. The Last Mile



AFBI research has shown that improving grass utilisation by 1 t DM/ha, combined with improving grass quality by grazing at the correct stage, can boost the margin over feed costs by around **£330/ha** on dairy farms or **£200/ha** on beef farms

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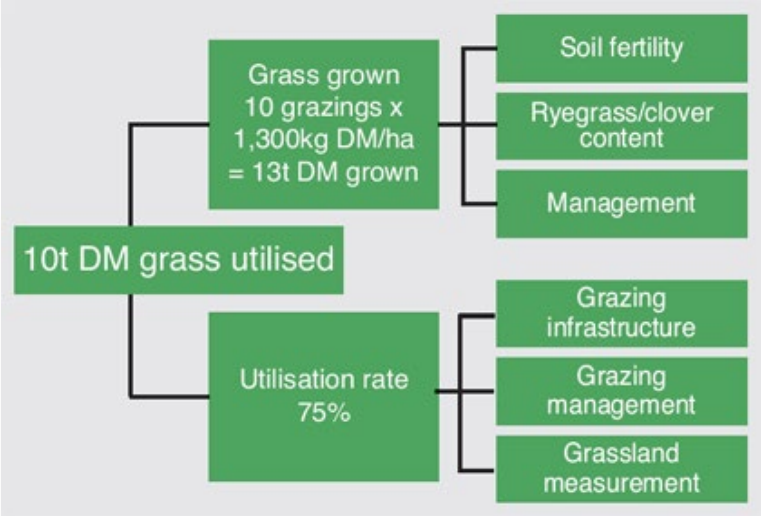
3. The Last Mile



AIB
An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine
Grassland AGRO
FBD INSURANCE
FARMERS JOURNAL
PastureBase IRELAND

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AgriSearch Dairy Conference

Summary

- £10m of farmer levy has levered over £70m in total project value
- Levy collection and rates need to be increased
- Partnerships can deliver greater impact for all

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Beef	30p	£1.81
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Discussion Panel

Past PhD: Peter Kennedy, Mark Little, Debbie McConnell

Past PhD, Farmer & Co-research Jessica Pollock

Farmer & Co-researcher: John Egerton, John Martin

Chaired by Ian McCluggage, Agrisearch Vice Chair

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The Nutrients Action Programme Consultation 2026 - 2029

- A Scientific Critique

Sinclair Mayne

Scientific Adviser, AgriSearch

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Nutrients Action Programme 2026 –2029 Consultation

- AgriSearch recognises the need to reduce nutrient losses to the environment from ruminant livestock systems, as part of an overall Northern Ireland strategy

  - AgriSearch has funded and supported a number of on-farm research projects to examine options to reduce nutrient loss

- Essential that measures proposed are based on robust science – otherwise there is significant risk that measures will be ineffective/counterproductive and lead to industry disengagement

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Nutrients Action Programme 2026 – 2029 Consultation

Issues of concern:

Number of proposed new measures presented without appropriate supporting scientific evidence:

i. **Fertiliser N levels**

ii. **New proposals for derogated farms**

iii. **Focused approach for 'high-risk areas'**

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Review of Current Chemical Nitrogen Fertiliser Limits for Grassland

'Following the completion of trials by AFBI, it is the Department's proposal to align the 2025 NAP Regulations with the United Kingdom Fertiliser Manual RB209.'

No details of trials and published data provided

RB209 has been evaluated previously within Northern Ireland (for previous NAP's) and the methodology was rejected as it failed to take account of local grass growing conditions and was considered impractical for application at farm level

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N Fertilizer Limits for Grassland 2019 vs DAERA Proposed (kg N/ha)

Silage	2019*		DAERA
Dairy and intensive beef	Dairy	Other	Proposed (Pages 31,32)
- Non Derogated	272	222	182
- Derogated	272	222	150
Intensive high yielding			
- Non Derogated	272	222	242
- Derogated	272	222	210
Grazing Yield (t DM/ha)			
4 -7	272	222	50
7 -9	272	222	130
9 -12	272	222	180

) N response: 2.5 t DM for 50 kg N!

* Whole farm Basis

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Implications of Reduced Fertiliser N Levels – Silage Area Only

Silage area in NI - 300,000ha.
Assume 50% of silage area is impacted (150,000 ha)

- **Total reduction in silage 130,080 t DM (based on 15 kg grass DM/kg N fert)**
- **Assume 25% loss in silage production = 97,560 t less silage for feeding**
- **Assume half of those affected decide to feed more concentrates:**

Need to replace 48,780 t silage DM by increased concentrates.

- **Assume 1:1 substitution = 48,780 t extra concentrates**

- **Concentrates contain 4.7 g P/kg fresh weight**

Potential additional P loading = 229 t P across Northern Ireland

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NAP Derogation

- **Very significant effort made to secure derogation for grassland farmers in previous NAP with EU Commission**

- **Agrisearch pleased to note DAERA plan to retain derogation limit up to 250 kg manure N /ha for 'grassland cattle farms'**

- **Quotes from current Consultation document:**

  - ***'The derogation continues to be an important measure to facilitate more efficient use of manure in intensive grassland agriculture in NI.' (Page 6)***

  - ***'Evidence from monitoring carried out by AFBI shows that risk of P losses from derogated farms is less than that of non derogated farms.' (Page 12)***

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NAP Derogation Proposals

- **Derogated farms will have lower fertilizer limits for both silage and grazing than non derogated farms (Page 31 and 32), even though they operate at higher stocking rates (250 vs 170 kg manure N/ha)?**

- ***'.. the Department is proposing that 'it will be necessary for all derogation applications to undergo a Habitats Regulations Screening which will inform the decision to grant, refuse derogation applications or apply further conditions.' Page 37***

Additional measures will reduce uptake of derogation despite '*risk of P losses from derogated farms being less than that of non derogated farms.*'

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Additional measures - Focused approach for high-risk areas and sensitive sites (Page 51-52)

- 2025/2026 Develop and deliver a pilot project with ‘a set of new focused NAP measures’
- 2027 ‘If the pilot does not show a positive change, develop additional mandatory measures’
- 2028 ‘Curtailing of farming activities if outcomes not achieved*’ Page 53 (small print)
- *Subject to assessment of wider catchment/water body contributing sources/pressures
- No information on measurements to be undertaken
- No recognition of fact that trends in majority of water quality parameters require significant timescale to reflect mitigation measures.

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What Does the Science Say?

‘Literature review undertaken on 25 previous studies from across Europe, USA, New Zealand and Brazil, which were conducted in medium-sized river catchments (1-100km2) where mitigation measures had been implemented to improve water quality.’

‘The review highlighted that to measure water quality change in medium-sized catchments, scientists should account for long time lags, from four to 20 years, when designing measurement programmes.’

CELU

Practice change and water quality response

TEAGASC took part in an international research review which examined how long it takes for water quality to improve after changing a potentially polluting agricultural practice or introducing a set of mitigation measures.

A global question

The time between the introduction of mitigation measures and a water quality response occurring is called time lag. How long it takes is a big question and an important one for farmers, as well as policy makers. Two components of time lag are, firstly, the physical movement of water and pollutants (hydrological time lag) and, secondly, the transformation of these pollutants before they affect water quality (biogeochemical time lags). Within agricultural catchments these time lag components interact and are influenced by the soil, the subsoil and the geology. To guide our expectations for water quality improvement in Irish river catchments, we looked at experiences from around the world for issues around phosphorus (P), nitrogen (N), suspended sediment (SS) and river biology.

International catchment studies

A literature review was undertaken on 25 previous studies from across Europe, USA, New Zealand and Brazil, which were conducted in medium-sized river catchments (1-100km²) where mitigation measures had been implemented to improve water quality. For the review, we also defined the aspects of time lag:

- response time – how long does it take for the practice or measure to have been implemented before a change in water quality starts to emerge?
- measurement time – how much monitoring is required, including beyond the emergence of the change in water quality, to say for certain that change has definitely happened? This is in order to statistically separate signals or responses from environmental noise.
- implementation lag – the time it takes for practice change to reach a maximum or threshold rate of implementation.

Positive effects and catchment scale

Positive effects on one or more water quality indicators were measured in 17 of the 25 studies reviewed. These positive effects occurred one to ten years after practices were implemented (**Figure 1**). In contrast, four to 20 years were needed to statistically detect the positive effects on water quality (**Figure 1**). The longer times appeared to have a relationship with scale. The larger the catchment scale, the longer it took to respond to practice change and subsequently measure a water quality change. The review indicated that there was also a tendency for the response time to increase as the travel time of the pollutant flow pathway increased. For example, SS and P transport, which occurs predominantly via the overland flow pathway, had opportunities to be remediated quickly, whereas N leached via subsurface flow pathways took longer to remediate (**Figure 2**).

Implementation lag times ranged from 0.5-14 years, tended to increase with catchment size up to about 20km², and were not always shorter when practice change was mandatory. A caveat in most of the studies was that nutrient management practice data,

Melland, A.R, Fenton, O and Jordan, P (2018) Effects of agricultural land management changes on surface water quality – A review of mesoscale catchment research. Environmental Science and Policy 84:19-25

Nutrients Action Programme 2026 – 2029 Consultation

- **The scientific evidence base to support a number of the proposed changes is weak/non existent – This is a major concern!**

- **A number of the measures proposed have the potential to increase P losses to river catchments**

- **The timescale required to detect impacts of changes in farming practice on water quality in catchments varies from 4 to 20 years**
  Threats of additional mandatory measures including '..curtailing of farming activities' after 1 year are therefore untenable

AgriSearch recognize need for change – based on solid scientific evidence base to achieve realistic and meaningful outcomes

2026-2029 NAP Proposals Initial Impact Anaysis

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15th May 2025

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Initial Impact of NAP Proposals

Using data from the 2023 Carbon Benchmarking of Dairy Farms in the AgriSearch Beacon Farm Network we have plotted the likely impact of the NAP proposals.

These farms are among the most efficient in Northern Ireland

These figures should be seen as the upper end of what is achievable.

No purchased P fertiliser was included in any of the P Balance calculations.

New lower P% content of concentrates has been used in these calculations

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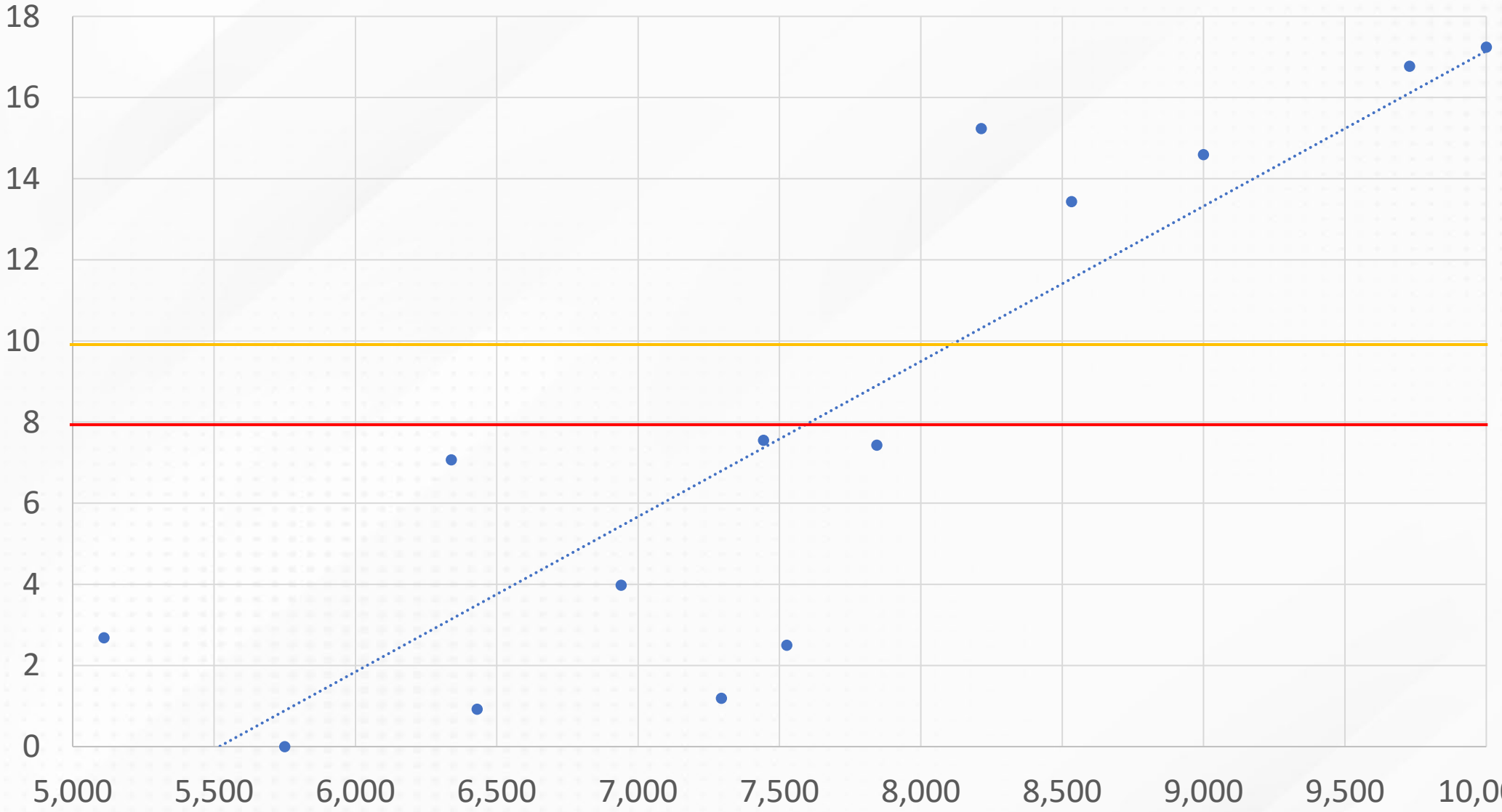
Milk Yields (litres / cow) V P Balance (kg P/Ha)



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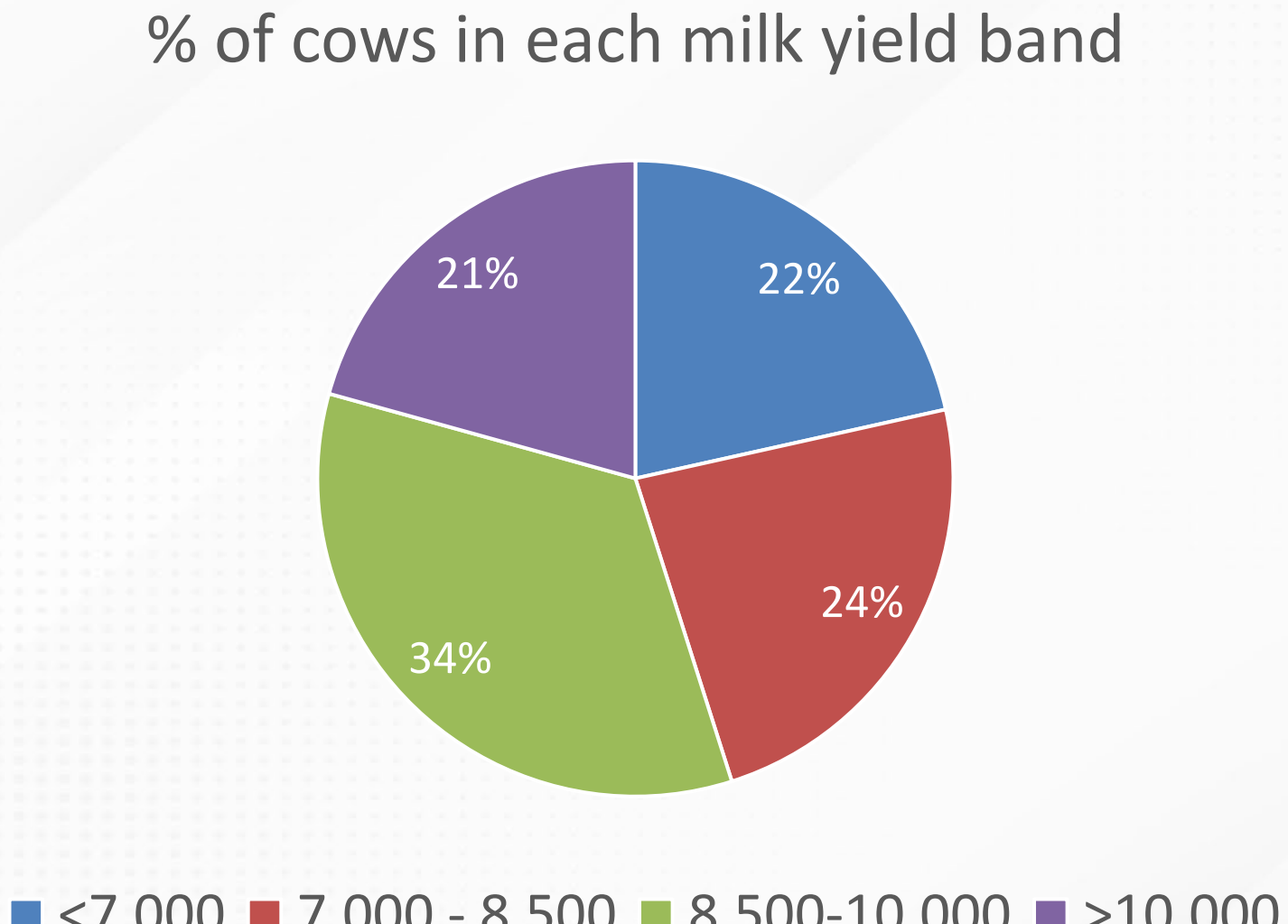
AgriSearch 2025 Dairy Farmer Survey



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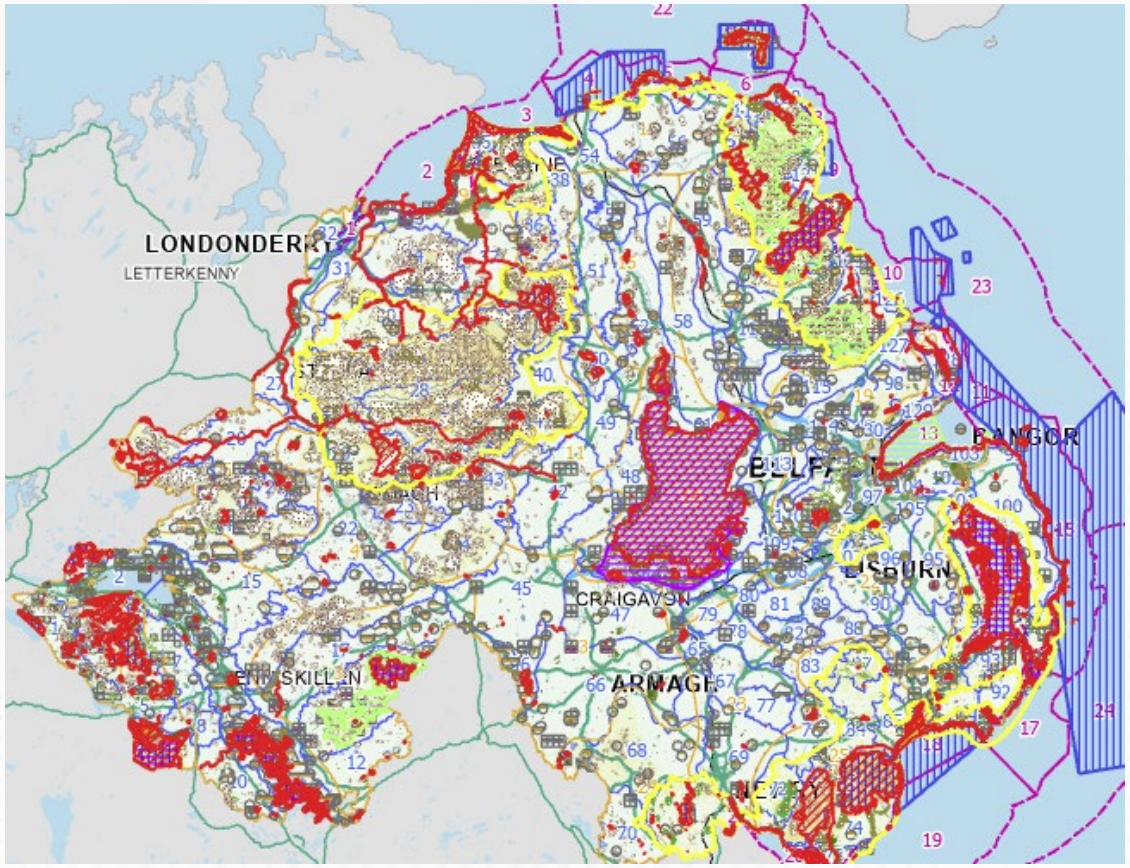
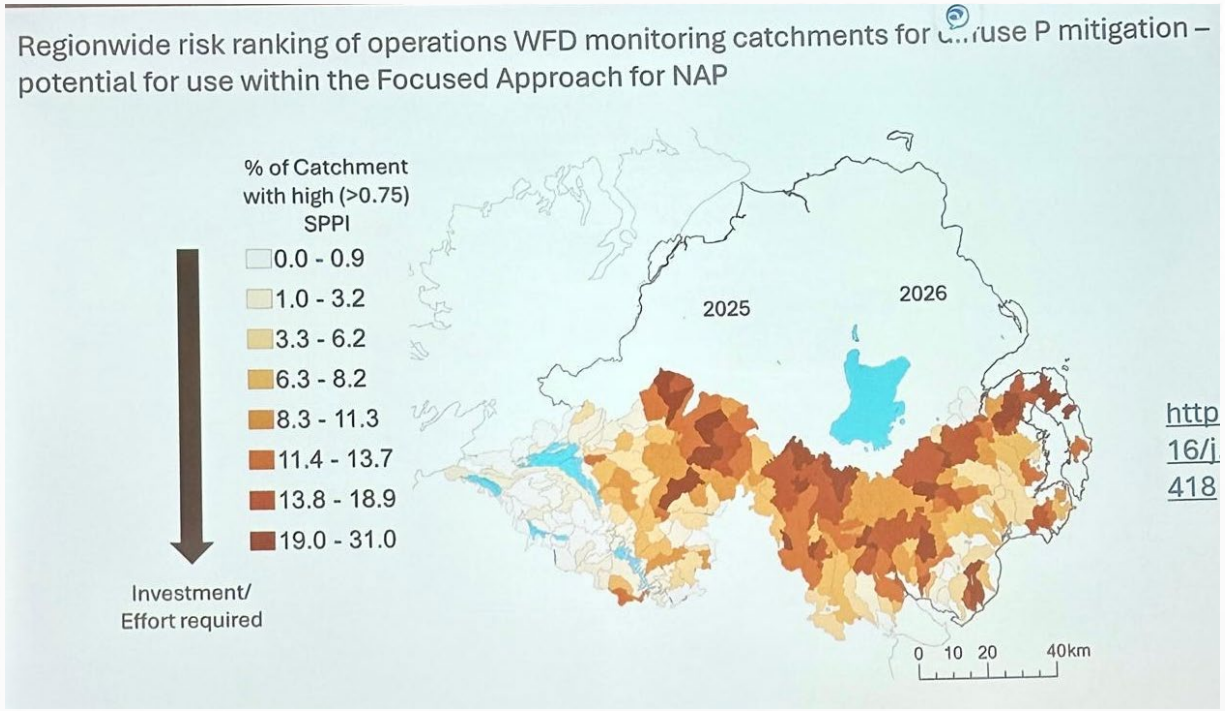
Protected Areas & Focus Areas

Protected Areas



Candidates for Focus Areas (SNHS Zones 1&2)



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Real world examples

	Farm A	Farm B
Farm Size (Ha)	114	77
Stock on farm	200 Dairy Cows + replacements	123 cows + replacements (+ some beef calves 0-1 yr old)
Yield (litres) & Concentrates per cow	8,214 litres from 3.7t	8,533 litres from 3.2t
P Surplus (kg P/Ha)	15.2	13.4
At P limit of 8kg per Ha the farm would need:		
Extra land (ha) or	103	52
Reduction in Stock or:	47.5%	40.4%
Export Slurry (gallons)	349,531	176,855

Conclusions

Most dairy farmers will find the 8kgP/ha an impossible target to meet in the time frame allotted.

Dairy farmers with lower yielding herds will also be affected by the lower limits on fertiliser and other proposed constraints

Our initial analysis indicates that the P balance target could also severely affect beef finishing units.

Beef & Sheep farmers will be much less willing to accept imports of slurry from their dairy farmer neighbours given the increased bureaucracy

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