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Protection Of Waters Against Agricultural Pollution Through Establishment Of A Monitoring And Reporting Methodology For The Nitrate Action Plans

EuropeAid/140563/IH/SER/TR

NATIONAL CONFERENCE PROTECTING WATERS AGAINST AGRICULTURAL POLLUTION

Nitrates Directive and Advisory Service Pat Murphy

June 2, 2022
Ankara



REPUBLIC OF TURKEY
MINISTRY OF ENVIRONMENT,
URBANIZATION AND CLIMATE CHANGE



Environment and Climate Action
Sector Operational Programme



REPUBLIC OF TURKEY
MINISTRY OF AGRICULTURE
AND FORESTRY



NIRAS



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Overview

- Teagasc Advisory Service
- Nitrates Directive
- Issues



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What is the Teagasc?

Research

Education &
Training

Extension

Systems & Economics
Production

systems

	Midwest Friesian				Early maturing				Late maturing			
	Rel	Size	Steel	Slender	Steel	Slender	Steel	Slender	Steel	Slender	Steel	Slender
Birth of lact	February				March				March			
Calving month	May	November	January	February	December	January	February	March	May			
Calving interval	11.5	0.35	1.44	1.18	1.21	1.01	1.01	1.01	1.01			
Calving weight (kg)	308	278	255	238	306	278	255	238	308			
Calving grade	0.42	0.41	0.31	0.43	0.43	0.43	0.43	0.43	0.42			
Cattle Ireland index	5.5	1.2	2.1	3.9	5.8	5.8	5.8	5.8	5.5			
Grass yield (kg/ha)	16	36	44	51	47	47	47	47	16			
Gross margin (£/ha)	1219	1021	940	988	1041	1022	1022	1022	1219			
Net margin (£/ha)	331	151	254	379	335	334	334	334	331			
Change in net due to												
£/ha	113	114	108	113	123	113	113	113	113			

Carcase conformation and
breed heruses critical to
profitability.

Net margins sensitive to calf
and concentrate price

Take home message
High gain from grass and younger
finishing

Profitability

Environmental footprint

Supporting Irish Agriculture
Linking Research, Extension
and Education to achieve
development through technology



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Farmers & Advisory Services in Ireland

➤ 130,000 Farmers

➤ 35,000 Full Time

➤ 95,000 Part Time

➤ Teagasc Advisers (300)

➤ Production

➤ Environmental

➤ Compliance with Regulation

➤ Private Advisors (700)

➤ Compliance with Regulation

➤ Environmental

➤ Production



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Farmers & Advisory Services in Ireland

General Advisory Service Funding

- 40% - Funded by client fees
- 55% by Government Grant (Central)
- 5% - Industry Initiatives

ASSAP (Water Quality) Advisory service

- 60 % Government Funding (Agriculture and Water)
- 40% Industry Funded
- No Client fees for this service



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Nitrates Directive – Advisory Services



Experiences and learning in the rollout of Nitrates

Advisory Perspective

Behavioural



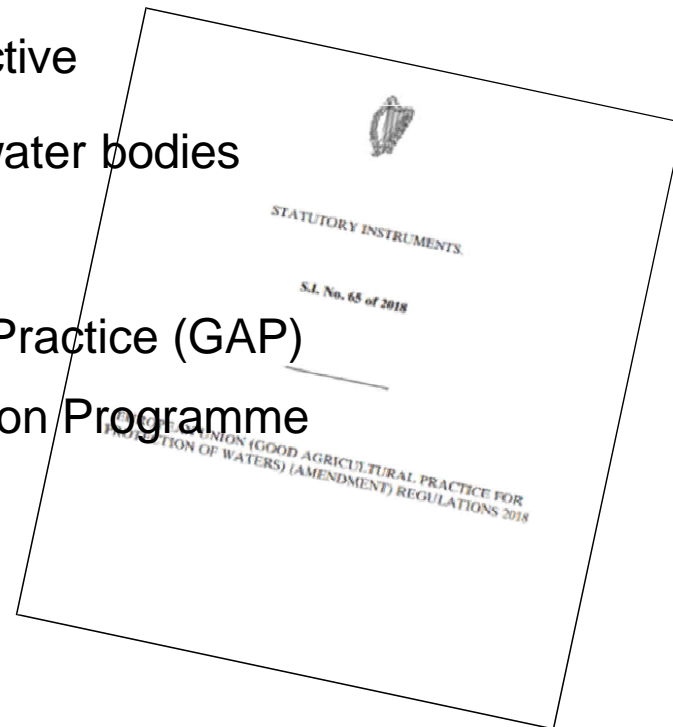


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Nitrates Action Programme (NAP)

- Designated the entire territory for the Nitrates directive
- A basic level of protection was put in place for all water bodies throughout the country
- The mandatory elements of the Good Agricultural Practice (GAP) Regulations are delivered through the Nitrates Action Programme
- 5th Nitrates Action Programme - 2022
- Derogation in Place for >170 Kg / ha stocking rate
- Focus on Nitrogen and Phosphorus





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Nitrates Action Programme – Main Measures

- Limits on farm stocking rates (170Kg N)
- Legal limits on the application of nitrogen and phosphorus fertilisers
- Preparation of Fertiliser Plans
- “Closed periods” prohibiting the application of organic and chemical fertilisers during environmentally vulnerable parts of the season
- The maintenance of buffer strips and other conditionality adjacent to watercourses
- The establishment of minimum storage requirements for livestock manures
- Green cover in tillage lands
- Records relating to stock, land use and fertilisers



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Nitrates Action Programme – Derogation Measures

- Higher Limits on farm stocking rates

But

- Annual application
- Detailed Plan (normally supported by advisers)
 - Fertiliser
 - Storage
- Annual records submitted
- Higher likelihood of audit
- More stringent land management and manure application rules
- Extra Controls e.g. Fencing of watercourses



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Issue 1 – Building and Disseminating Knowledge Agricultural Catchments Programme (ACP)

- Established under Nitrate
evaluation

We didn't know how much we didn't know

years working with 300 participating
farmers – full advisory service





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Agricultural Catchments Programme (ACP)

- Findings have been important for policy
 - Understanding the Pathway for losses – very complex
 - Water quality trends showing signs of recovery (lag times) but have stagnated
 - Nutrient use efficiency increasing
 - Decreasing % of excessively high P soils
 - Closed spreading period is effective in reducing losses
 - Significant climate effect on losses
 - Contact with an agricultural advisor has a positive effect on NMP adoption



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Agricultural Catchments Programme (ACP)

- Advisor training is critical
 - If expecting advisers to support – need to be effectively trained
 - Combined scientific and training function
 - Visual and tangible
- Backing up the measures
 - Farmers really objected to closed periods – Biggest issue
 - “If land dry why not spread”
 - Proof that susceptible to loss



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Issue 2 – Introducing Nitrates

- Ireland late to introduce regulation (2006)
- Nutrient Limits based on Scientific Recommendations
- Linked to Payments
- Inspections Regieme
- Significant cut in fertiliser use for some farmers
- Very significant increase in storage requirement
- **Very significant argument with farming organisations**
- **Seen by farmers to be overly restrictive**





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Issue 2 – Introducing Nitrates - Advisory

- Helping farmers to Comply and Understand

Comply

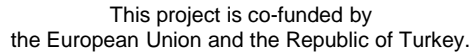
- Advisory services for farmers
- Trained and supported ??
- Significant workload on planning
- Significant workload on inspection
- Advisory Support Tools ?
- National Compliance Tools ?



Understand

- Communication of Water Quality status in a way that farmers understand
- Role of Agriculture in Water Quality
- Importance of Agriculture to resolving the problem
- Effective Implementation at farm level





Issue 3 – Support Tools

- ## Little focus on farmer implementation

Manure Allocations		
Fertilizer	Estimated T	Applied T
Cattle Slurry		840
Farmyard Manure		100
Total P in Manures (Grazing + Non-Grazing 405.0)		



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Issue 4 - Regulation alone won't deliver

- Regulation to a baseline – Effective
- Delivered results – Then Stagnated or Detioriated → More Regulation ?
- Can become more expensive and wasteful
- Need to support practice change at farm level
- Targeting – to deliver solutions where needed
- Co-ordinated approach
- Examples



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Example 1 - Diffuse P Loss?

- P loss is characterised by:
 - Low permeability soils – clay soils
 - Water flowing overland
 - Soil/sediment loss – P attached to soil particles
 - Soluble P washed off in water
 - < 1Kg of P per Ha loss has an impact on water quality
- How can we manage this?



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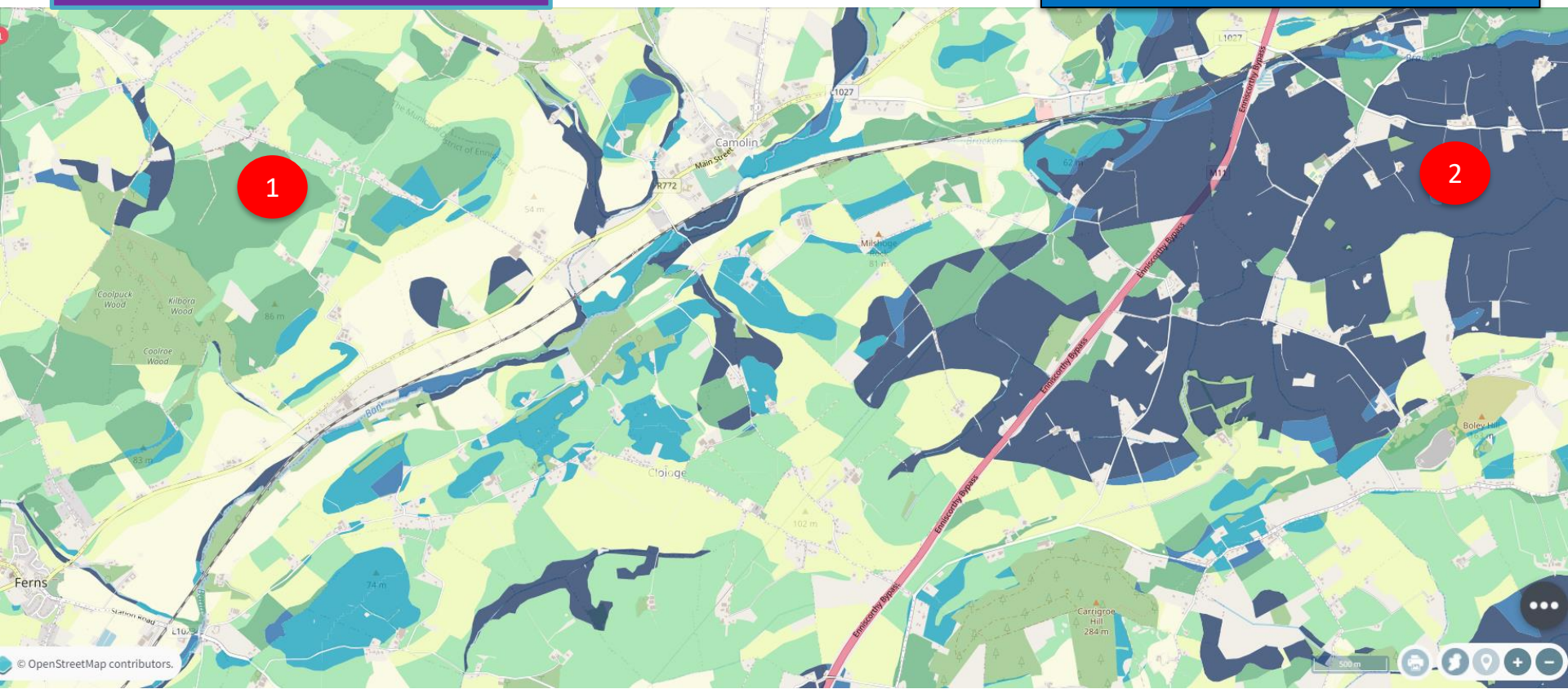
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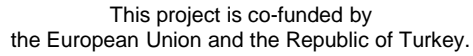
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Example 2 - Identifying the problem

N Loss Risk

P Loss Risk





Example 2 - Identifying the problem



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Issue 4- Lessons

- After initial impact from nitrates – Need to be more Targeted
 - To achieve improvement
 - To avoid cost
 - Effort from farmer
 - Expenditure
 - Loss of Income
- Information & Toolkit are essential – EPA Ireland
- Need Advisors on ground to support translation into action



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Issue 5 – LAWPRO & ASSAP

- EPA & Government Department with responsibility for water
- Decided on Complimentary Approach
- To work in specific areas where there are water quality problems
- Four essential pieces
 - Detailed information
 - Clear identification of issues by LAWPRO Scientists
 - Advisory Support – By ASSAP Advisers
 - Government and Industry involvement



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Why do we need to improve water quality?

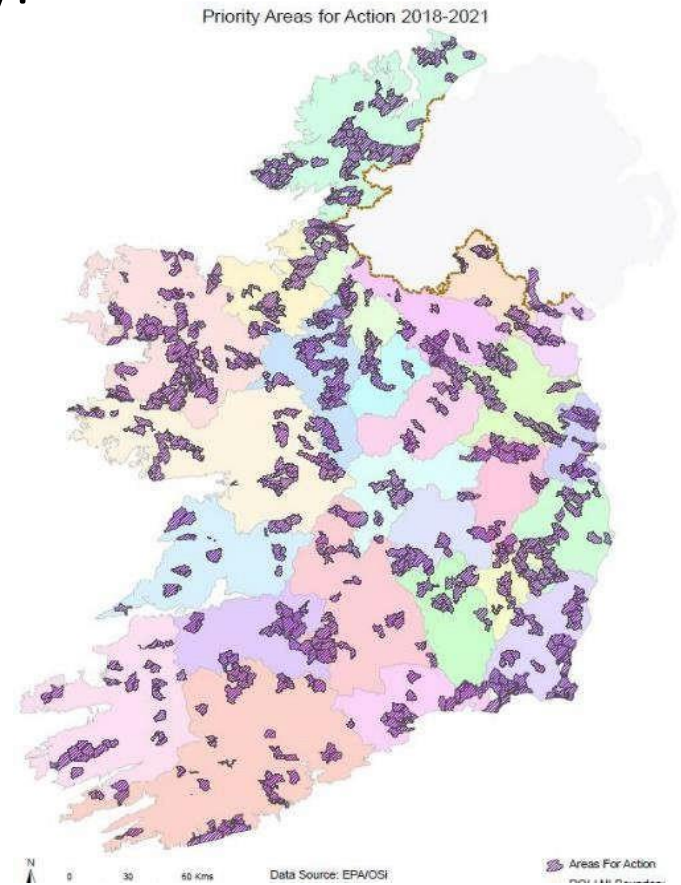
- Identified priority areas for action

LAWPRO

Scientific Assessment

ASSAP

Farmer Advice





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LAWPRO Local Authority Water Programme

Step 1 Improve Scientific Understanding

- Water quality –nutrients, sediment, organic pollution, ecological conditions
- Importance of waters in the PAA –drinking water, aquaculture production, or bathing area
- Connectivity – how the geological features of the landscape influence how water and pollutants flow and are connected across the catchment
- Impacts from human activities –





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LAWPRO

Local Authority Water Programme

Step 2 Community Engagement

- Local Information Meeting Public
- Local Farmer Meeting – With ASSAP

Step 3 Assessment and Field Work

- Sampling
- Examining flora and fauna
- Riverbed Assessment
- Walking the river for signs of pollution
- Identify Possible Fixes
- Referrals – For action





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What is The ASSAP?

- 33 Advisors
 - 20 Teagasc
 - 13 from Dairy Co-ops
- Key Operating Principles of ASSAP
 - The ASSAP programme provides farm advice and support only
 - It is voluntary and collaborative
 - There is no connection to the regulatory and compliance mechanisms of the state.
- Advisors farm visits based on Referrals and Catchment assessments



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ASSAP Advisers Role



Referrals

Catchment
Characterisation



ASSAP Farm Plan

Issues Identified
&
Proposed Actions



Follow Up - Visit



Compile Data

Measure/Action	2017	2018	2019	2020	2021	2022	2023	2024	2025
1. Nitrate Action Plan	227	207	187	167	147	127	107	87	67
2. Nitrate Action Plan	340	320	300	280	260	240	220	200	180
3. Nitrate Action Plan	25	24	23	22	21	20	19	18	17
4. Nitrate Action Plan	15	14	13	12	11	10	9	8	7
5. Nitrate Action Plan	11	10	9	8	7	6	5	4	3
6. Nitrate Action Plan	12	11	10	9	8	7	6	5	4



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ASSAP – Farm Assessment Issues

Farm Yard		Land Management		Nutrient Management	
F1	Slurry Storage	LM1	P Loss Through Overland Flow	NMP1	Preparation and implementation of
F2	Silage Pits and Effluent	F1	Slurry Storage	LM1	P Loss Through Overland Flow
F3	Loose Housing and F	0		0	
F4	Round Bale storage	1	Improved management of collection and storage of farm wastes	1	Management of Critical Source Areas (CSA's)
F5	Dirty yards	2	Additional storage for farm wastes required	2	Riparian Buffers - Fenced/Unfenced
F6	Cattle &/or Sheep handling facilities	3	Separation of clean, grey, soiled and dirty water in farmyard	3	Establish field boundaries and hedges
F7	Clean & Grey Water m	4	Destock/reduce stock for winter	4	In field grass buffers
F8	Drain Connection from Water	5	Informing and educating farmers	5	Alleviate compacted areas in fields
F9	Pesticide Storage and Diesel/oil tanks	F2	Silage Pits and Effluent Storage	6	Woodland planting
F10	Other (Specify)	0		7	Improved farm road/tracks design and location
		1	Improved management of collection and storage of farm wastes	8	Establish/preserve wetlands
		2	Additional storage for farm wastes required	9	Constructed wetlands
		3	Separation of clean, grey, soiled and dirty water in farmyard	NMP2	Achieving appropriate Soil Fertility (Lime P&K)
		4	Informing and educating farmers	0	
		5		1	Informing and educating farmers
		F3	Loose Housing and FYM Storage	2	Implementation of Nutrient Management Plan
		0		3	Precision application of nutrients at correct rate
		1	Improved management of collection and storage of farm wastes	4	No P on index 4 soils
		2	Additional storage for farm wastes required	5	Nutrient mining
		3	Separation of clean, grey, soiled and dirty water in farmyard	6	Liming
		4	Destock/reduce stock for winter	7	Calibrated spreading equipment
		5	Informing and educating farmers	8	Avoid application at high risk times
		F4	Round Bale storage	NMP3	Identify and Manage Critical Source Areas
		0		0	
		1	Improved management of collection and storage of farm wastes	1	Informing and educating farmers
		2	Additional storage for farm wastes required	2	No P on sensitive (CSA's) areas
		3	Separation of clean, grey, soiled and dirty water in farmyard	3	Precision application of nutrients at correct rate
				4	Avoid application at high risk times
		LM21	Protection of Abstraction Points and Wells		
		LM22	Invasive Vegetation		
		LM23	Buffers		

- Potential Issues = 46
- Total number of possible mitigation actions = 289



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Identifying potential losses from farm

■ Best Agricultural Pollution
Identifying Methodology for Nitrate Action Plans



- Improving Nutrient Practice to avoid losses



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ASSAP – Mitigation Actions



Jan. 25



Feb. 12



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ASSAP – Mitigation Actions



6 weeks post reseed





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ASSAP – Mitigation Actions



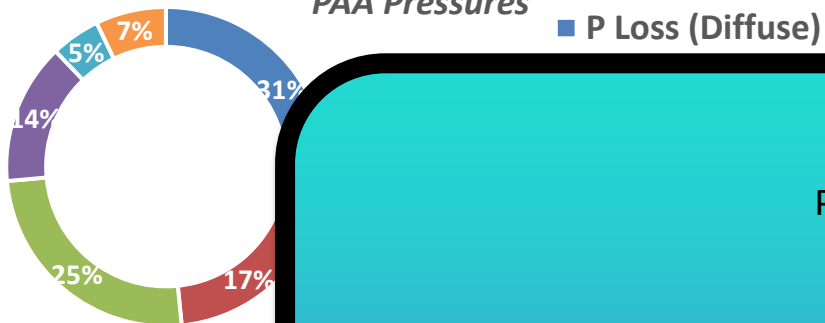


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ASSAP – 31 December 2021

PAA Pressures



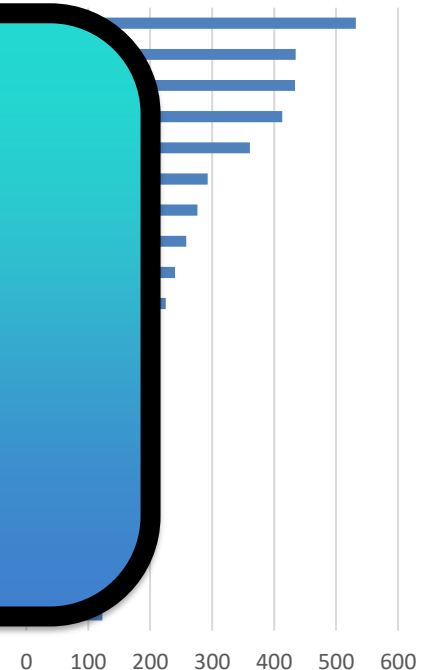
High Risk - 20 most frequent issues

PROBLEM

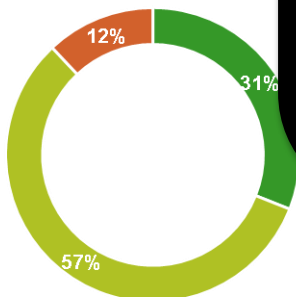
Simple practice Change – High Uptake

Where Investment Involved – Lower

No funding



Farm





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Issue 6: Water Quality Improvement Fund

- Government announced funding for a Water Quality Improvement Fund
- Funding to farmers to implement measures to mitigate the impacts of agriculture on water quality
- “For farmers who need to go a bit further”
- Principles
 - Priority access to Water Quality Projects
 - Above statutory requirement
 - Advisor recommended
 - Cover Costs Incurred



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Summary on Issues

- Regulation is crucial
- But -- Wont work on its own
- To drive continued improvement need advisers to work with farmers
- Based on good scientific information - local
- Need to build farmer understanding
- Work towards improvement of local water – Drinking, Rivers Lakes..
- Huge workload for advisers – working closely with farmers





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Farm Advice is a contact sport !!!



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Thank you
Questions?



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