

### **Agricultural Catchments Programme Better Water with Science**

**Influence of Soil Type** 

& Weather



#### **Catchment Specific Outcomes**



- Evaluate GAP measures
- Six Catchments
- Representing dominant land-use & production types
- >320 farmers
- Integrated advisory & research approach

Food and the Marine



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		Current Status						
		Catchment	Phosphorus		Nitrate-N		Ecology 2015-17	
Shaffy and the second		Mean	n EPA Mean EPA		EPA	Macro-invert		
			[mg/L]	EQS	[mg/L]	EQS	Spring	Autumn
Itomatic water monitoring station located esside the river outlet at each catchment		Dunleer	0.112	X	4.9	V	X	x
		Ballycanew	0.076	X	2.5	$\checkmark$	X	X
		Timoleague	0.063	X	5.8	$\checkmark$	X	X
		Castledockrell	0.029	V	7.0	V	$\checkmark$	X
A	An Roinn Talmhaíochta, Bia agus Mara Department of Agriculture	Corduff	0.029	V	1.1	V	$\checkmark$	X
		Cregduff	0.017	V	1.3	V	V	V
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Pathways



Delivery



Greater risk of N

leaching

0.6

th'1 0.4

oss ha

horus lo [kg TP ]

Impact

loss: Nitrate (NO<sub>3</sub>)

Greater risk of P loss: Mainly as particulate P overland flow



#### Poorly Drained Surface water Gley (Gleysols) Surface and shallow interflow dominatesgreater P losses

· Artificial subfield drainage may accentuate

# Good Farmyard Nutrient Management

How water moves (amount, rate and timing) within a catchment can override nutrient source pressure (i.e. soil P). Within a year the P loss can

vary more within a catchment than between catchments. One size does not fit all!

Critical Source Zones

#### **Solutions** All farms should & can





Good Farm Roadway Management



#### Where one Size does not fit all





Crops

Targeted Buffers zones Intercept pathway of nutrient loss

All sites meet drinking water standards for nitrate



# Biodiversity Regeneration In a Dairying Environment. BRIDE



- The BRIDE Project is a locally-led, agri-environment project which rewards farmers for their conservation efforts.
- The project is results-based *i.e.* more farmland habitats will result in higher financial payments.



**Figure 1:** Lessons learned from the BRIDE project (east Cork) will be relevant to other intensively-managed regions.

#### Innovation:

- Results-based wildlife conservation on intensive farms.
- Develop innovative options to restore and enhance farmland habitats.
- Highlight the contribution of intensive farmland to wildlife conservation .
- Creation of a market-based demand by the agri-food industry for farmland ecosystem services.



**Figure 2:** Species-rich field margins provide resources for many threatened farmland species



Figure 3: Managed hedgerow to increase their quality, resulting in higher payment



**Figure 4:** Species-rich grassland requires grazing to enhance its quality



# NMP Online – Improving Nutrient Management



#### Step 2 – Slurry and Organic Manures

 Put Slurry on Low Index P&K soil and on Silage ground (even if a little extra distance)

#### Step 3 – Chemical Fertiliser

- Top up with Chemical Fertiliser as needed
- Select compounds to meet requirements of individual fields
- Use NMP on line to guide on nutrient requirement of individual fields based on
  - Maximum allowances
  - Maintenance requirements Replace off-takes at least
  - Where fertility build-up is needed



# NMP Online – Improving Nutrient Management

#### Guidelines

- Use the banner colour that is assigned to your village or main board
- Use a number of text boxes in the body of the board (see a few examples attached to this email)
- Different font colours and text box colours can be used make sure they are easy to read
- Font Arial
- Font size 72+ (graphs might have a slightly font smaller on axes, etc.). Use bold if possible.
- Use graphics (photos, diagrams, graphs, etc.) and minimise the amount of text on the boards
- Use black border around pictures/photos/charts
- Use compatible colour pallette
- If you have a funding source, e.g. DAFM, FP7, Horizon 2020, please include on top right hand corner (FBD logo)



# Kildalton Open Source Sustainable Farm



This project is co-funded with Glanbia Ingredients Ireland



#### Geospatial research and its application to beef production

Guy Serbin<sup>1</sup>, Shafique Matin<sup>2</sup>, Juliette Maire<sup>1</sup>, Robert O Hara<sup>2</sup>, and Richa Marwaha<sup>2</sup> <sup>1</sup>Teagasc, Johnstown Castle, Environmental Research Centre, Co. Wexford <sup>2</sup>Teagasc, National Food Research Centre, Ashtown, Dublin 15

AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY

#### Summary

- Satellite mapping of farmlands allows for the development of improved decision support tools for farmers, advisors and other stakeholders.
- Teagasc is upgrading its web-enabled geographic information system (WebGIS) infrastructure to better utilise
  historical and current data, including satellite and aircraft data, weather, soils, etc., and develop new farmer
  support tools.

#### Areas of active research

- Current plans for integrating Teagasc geospatial resources into an effective WebGIS;
- How the WebGIS can benefit farmers with High Nature Value (HNV) farmlands;
- Research in remote sensing of drainage;
- Remote sensing grass growth;
- Remote sensing the influence of weather on fodder stocks.









http://ec.europa.eu/life

### Participants

 Beef Carbon involves 2,000 farms across 4 nations
 120 Irish farms



#### Goals

 Cut beef carbon footprint 15%
 Reduce greenhouse gas by 120,000 tonnes of CO<sub>2e</sub>

≈ 60,000 cars



#### Beef Greenhouse Gas



Improving efficiency cuts footprint



## **MCPA: Best Practice for Rush Control**

#### The Risks

 A single drop of pesticide lost to a water body such as a stream (1 meter wide, 0.3 meter deep) is enough to breach the legal limit for pesticides in drinking water along 30km of its length.



#### What to do?

- Consider non-chemical control methods (cutting, liming, drainage, sward improvement).
- Target only the rush affected areas at the correct time (cut rushes one month before).
- Consider weed wiping with glyphosate (MCPA not allowed in weed wiper).
- Follow best practice procedures when using any pesticide.



#### Key Messages

- MCPA products have a 5m buffer zone from watercourses (including dry drains)
- MCPA containers should be triple rinsed after use with the rinse put into the sprayer.
- Lids from pesticide containers should be put back into the triple rinsed containers.
- Do not fill sprayers from watercourses.
- For GLAS LIPP and THM 'rushes must be controlled either mechanically, by weed wiping and/or by spot spraying'. Follow GLAS specifications



# **Pesticides and water quality**

#### Herbicides and drinking water:

- EPA detected 150 exceedances of the pesticides limit in 2017
- 49 drinking water supplies affected with monthly monitoring
- Point sources (leakages from farmyards, mixing, washings, containers)
- Diffuse sources (spray drift, run-off and drainage)

Chemical Type	% of total
MCPA	79
2,4-D	5
Clopyralid	3

#### What can I do to protect water?

- Only apply herbicides when
- Plants are dry/ actively growing
- No rain forecast for 48 hrs
- No water at to near soil surface
- Maintain 5m from water bodies
- Sprayer in tip top repair
- Read the label & do not over apply product



Breakdown of exceedances by county					
County	No. of Exceedances	Number of Supplies			
Мауо	25	5			
Louth	24	4			
Longford	13	2			
Cavan	11	6			
Kilkenny	10	2			
Limerick	10	3			
Cork	8	5			
Monaghan	8	3			
Kerry	5	3			
Kildare	5	1			
Carlow , Fingal, Galway, Roscommon	4 per county	6			
Clare, Donegal, Meath, Offaly, Wicklow, Sth Dublin	14 across 6 areas	8			



# **Nutrient value of slurry**





# N efficiency and grass contamination







Units N/1000 gal







**Dribble bar** 





	Spring	Summer
Units N/1000 gal	9	6



**Trailing shoe** 

	Spring	Summer	
Units N/1000 gal	11	8	



Injection





?

Moscha



# **Derogation-GLAS-TAMS**

#### New Derogation rules

- 50% of all slurry produced on a derogation farm must be applied by the 15<sup>th</sup> June each
- After 15<sup>th</sup> June: Slurry must be spread using either one of the following

   Dribble bar
   Shallow injection spreader
   Trailing shoe spreader
  - Deadline extended to 15<sup>th</sup> July in 2018
  - Farmers must have sufficient storage for all livestock
     manure and soiled water

#### <u>GLAS</u>

 GLAS Low Input Slurry Spreading: €1.20/m3 (€5.45/1,000 gals)

#### **TAMS Eligible investments**

- New tanker and umbilical slurry spreading system fitted with:
   Dribble bar/slurry spike spreader
   Shallow injection spreader
   Trailing shoe spreader
- Retrofitting of existing tanker with a Dribble bar/slurry spike spreader

#### TAMS Grants amounts

- All eligible farms: 40% to a maximum investment of €40,000
- Registered farm partnerships: 40% to a maximum investment of €60,000
  - Young farmers: 60% to a maximum investment of €40,000



This project has been funded by DAFM under the National Development Plan 2007 -2013

SQUARE

### Soil Quality impacts on crop productivity

## and other soil functions

## **Objectives**

- Evaluate the status of soil structural quality in Ireland
- Assess impact of soil structural degradation on functional capacity of soil
- Develop a toolbox for farmers to assess structural quality





### SQUARE How?

- Field campaign 160 grassland and tillage sites over three years
- Farmer surveys to assess ranges in soil management practices.

### Outputs

- Visual Soil Assessment for Irish soils and in-field toolkit for farmers
- Knowledge and scientific understanding to facilitate improved management practices

# SQUARE supports the co-existence of environmental sustainability with increased food outputs.









