# Using data management systems to facilitate better nutrient management planning on Irish farms

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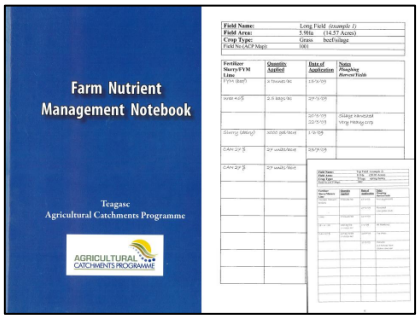
## BACKGROUND

- In Ireland farm fertilizer planning (for nitrogen & phosphorus) is mandatory under cross compliance.
- The cost of fertilizers has increased continuously since 2000 causing farmers to re-evaluate their fertilizer input strategies in order to increase fertilizer use efficiency and reduce costs.
- A Nutrient Management Plan (NMP) is a strategy for maximising the return from on- and off-farm chemical and organic fertilizer resources.
- A NMP can yield a double-dividend of optimising fertilizer costs and protecting the environment.
- To date developing an NMP has been a time consuming process involving collation of data from a number of disparate sources, and resulting in complicated and lengthy spreadsheet outputs

## AIM

The Agricultural Catchments Programme (ACP) (Fealy et al., 2010; Wall et al., 2011), have developed an innovative geo-computational information management system based around geographical information systems (GIS) for coordinating nutrient management planning on Irish farms, to compliment an existing Teagasc In-house NMP tool (Lalor, STJ, 2012).

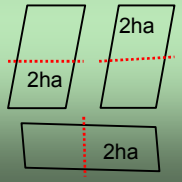
Soil Samples




Farm Nutrient Management Records (**NMR**)

Laboratory Information Management System (**LIMS**)

Geodatabase




Digitised and geo-referenced fields/land management unit areas

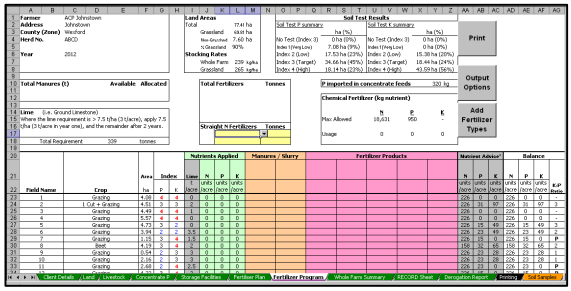
Document Management System (**DMS**)

**LIMS Analysis include:**
- Morgans P
- Morgans K
- pH
- Trace Elements
- Organic Matter
- Lime Requirements
- etc

**Benefits of DMS**
- Checking in/out
- Version control
- Secure access
- Collation of multiple files for analysis

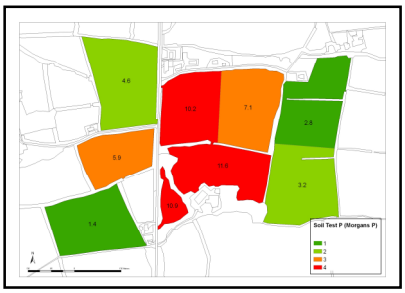
# Nutrient Management Plan (NMP)

**Tabular Outputs**



Farm Nutrient Management Plan (**NMP**)

**Map/Spatially Intelligent Outputs**




Morgans P Soil results


Fertilizer application advice

## BENEFITS

- Enable farmers, advisors & researchers to utilise multiple farm nutrient sources and geospatial datasets
- Overlay many years of soil analysis results to track temporal changes in soil fertility and nutrient management
- Facilitates integration of geospatial analysis against a wide variety of other datasets
- Maximises the integrity of the data; each year information from the NMR feed into the new NMP

Demonstrating benefits to farmers

REFERENCES

- Fealy R.M., Buckley C., Mechan S., Melland A., Mellander P.-E., Shortle G. and Jordan P. (2010). The Irish Agricultural Catchments Programme: catchment selection using spatial multi-criteria analysis. Soil Use and Management, 26, 225-236.
- Wall D., Jordan P., Melland A.R., Mellander P.-E., Buckley C., Reaney S.M. and Shortle., G (2011). Using the nutrient transfer continuum concept to evaluate the European Union Nitrates Directive National Action Programme. Environmental Science and Policy, 14, 664-674.
- Lalor, STJ., – Nutrient Management Planning Tool, version 7 2012