Agricultural Catchments Programme Newsletter

AGRICULTURAL CATCHMENTS PROGRAMME

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Farmer Focus: Joe Rath, Farmer and Beekeeper

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Joe Rath is a sheep farmer in the Ballycanew catchment with a passion for beekeeping. He runs a flock of 130 crossbred lowland ewes and lambs on his grassland farm. The low cost system Joe has been running on the farm for a number of years is a simple one with no chemical fertiliser applied.

The Ballycanew outlet is located on Joe's farm

With this in mind, Joe decided to apply for the 2023 Organic Farming Scheme (OFS). He became a member of the Organic Trust as part of the application process and is currently in conversion to full organic status on the farm. Organic manures will form a key part of the farm's nutrient management plans for the future and Joe is keen to link up with neighbouring farmers to import organic manures to feed his soils in the absence of chemical fertilisers.

Beekeeping is major element of Joe's farming system as it acts as both a rewarding pastime and a business venture, while also providing an essential biodiversity element to his farm. There are upwards on 50-60 hives dotted around the farm and elsewhere. Joe loves breeding bees and specialises in breeding native Irish species.

As well as producing honey from the bees, Joe also creates Nucs (nucleus colonies) which are basically small colonies of bees. These are then sold to both new and existing beekeepers to develop their hives. This brings great satisfaction to Joe, knowing that he can help new beekeepers set up their own hives.

A typical hive contains 50,000 – 60,000 bees in the summer

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Joe has also kindly hosted the ACP high-resolution monitoring kiosk for the Ballycanew catchment since the formation of the programme, which we are extremely grateful to Joe and all catchment farmers for, given their ongoing cooperation and support towards the programme.

Cover Crop Research Update

Bridget Lynch, Research Agronomist

Cover crops have a number of functions; they can 'catch' excess nutrients, 'cover' and protect the soil from erosion, potentially benefit the following crop from the legacy of the 'green' manure and also can provide a forage source for over winter grazing by livestock.

Ireland's 5th Nitrates Action Programme (NAP), requires in all circumstances that 75-80% of harvested crops be shallow cultivated or sown with a crop within 14 days of harvest. The earlier the green cover is established, the more N it can capture. Previous research work completed in Oak Park has demonstrated that both natural regeneration and a cover crop under reduced tillage and conventional ploughing can significantly reduce N concentration in drainage water compared to bare stubble ground. The reduction ranged from 74-86% for the cover crop (Mustard) and 11-42% for natural regeneration.

In 2021, the ACP team selected four catch crops from the Castledockrell catchment with a range of sowing dates for sampling as shown in Table 1.

Table 1: Sowing date and agronomic detail of catch crops selected for crop sampling 2021.

Date of Sowing	Crop Following	Sowing Method	Added Nutrients	Seeding Rate
10th August	Spring Barley	Disc Tilled with Spinner on Back	Pig slurry <1,000g/acre	8kg/ha
20th August	Winter Barley	Spirit One Pass Drill	1 bag of 18-6-12	8kg/ha
4th September	Spring Barley	Disc Tilled with Spinner on Back	0	8kg/ha
10th September	Spring Barley	Direct Drill	0	8kg/ha

Above ground crop samples were taken for dry matter yield determination and crop N % (see Figure 1). The August sown crops yielded much more biomass than the September sown crops through the sampling period with ~1000 kg DM/ha difference in mid November.

In addition, those crops that were not grazed, had a peak uptake of nitrogen of 48 kg/ha N and 43 kg/ha N for the 20th August and 4th September sowing dates. This shows the importance of sowing catch crops as early as possible after harvest.

Farmers at the catch crop demonstration site in the Castledockrell catchment see the effects of different treatments such as sowing date and mixture type

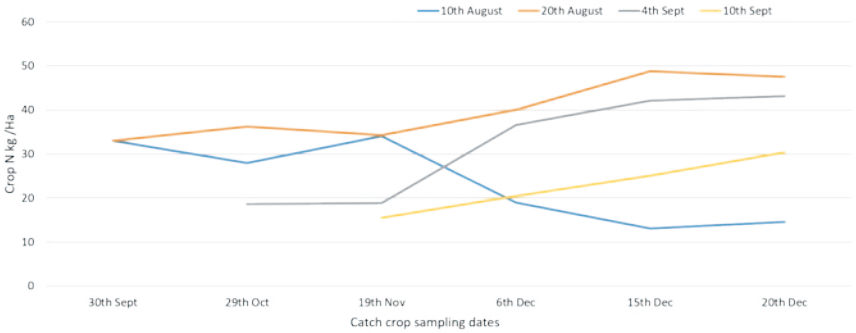


Figure 1: The effect of sowing date on crop N (kg N/Ha) of catch crops at six dates in autumn 2021

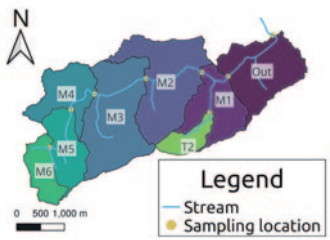
Water Quality: the Sub-catchment Approach

Jason Galloway, Hydrochemist Researcher

River water quality is often carried out on a large scale, sometimes taking in a whole river catchment, like the river Barrow for example. This approach allows a picture of national water quality trends to be identified relatively quickly and keeps costs down if measurement points are to be sampled at regular intervals.

However, a drawback of this approach is that water quality and trends occurring at smaller scale can be masked or hidden by other factors occurring further down the same river. For example, water quality in a particular area could be improving due to good nutrient management practices (e.g. spreading slurry at a time of year when the response to N is high). If water from this location then mixes with other areas downstream with poorer water quality, the signal from the good location could be lost all together.

In the ACP we have adopted a 'sub-catchment' approach to overcome this. Monthly water samples are collected at various locations along the course of the stream, which ends up at our catchment monitoring station, located at the position we call the "outlet". Each catchment can then broke down into smaller units, which we call sub-catchments.



The Ballycanew catchment split into sub-catchments

The water quality results from this monthly sampling are brought together with information regarding the soil type, land use and management practices within the different sub-catchments. This gives us a greater insight into how different land use and management systems can impact water quality. The improved understanding of how sub-catchments function gives a much better understanding of what causes larger-scale regional trends in water quality, and also, possibly even more importantly, what did not have an impact at all.

One of the key findings from this work is that we found no clear relationship between stocking and fertiliser application rates and stream water nitrate concentrations. In addition, our results highlighted the key role played by climate and the hydrological characteristics of catchments driving N loss from agricultural catchments.

Catchment Science Conference 7th-9th November

Tom O'Connell, Communications Officer

Preparations are well under way for our conference which is taking place later this year in Wexford. It will bring together scientists, regulators and practitioners engaged with water quality and gaseous emissions in agricultural river catchments.

In addition, there will be a panel discussion comprised of a number of farmers representing different catchments and enterprises.

As at previous conferences, there are a wide range of tours to some Wexford catchment farms and the Johnstown Castle Estate, Agricultural Museum & Gardens. There will also be a gala dinner along with some entertainment. For those interested in attending please contact your advisor or myself.

Our conference launch at Johnstown Castle: Edward Burgess, Per-Erik Mellander and Bridget Lynch, all ACP; Ted Massey, DAFM.

This newsletter is produced for the over 300 farmers in the ACP and is edited by its Communications Officer, Tom O'Connell.

All previous editions are available at www.teagasc.ie/agcatchments and for up-to-date weather information from our seven met stations visit www.acpmet.ie

Please feel free to contact Tom on 087 0609620 or tom.oconnell@teagasc.ie for further information and also with any suggestions for future issues.

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