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Creating and applying robust information resources for catchment management



Photo by Sim Reaney, Durham University

Note No. 01

Demonstration Test Catchments (DTC) is a UK government-funded project designed to provide robust evidence regarding how diffuse pollution can be cost-effectively controlled to improve and maintain water quality in rural river catchment areas.

Multiple initiatives have been designed to help address the problem of diffuse pollution, including the Catchment Sensitive Farming project and, more recently, Demonstration Test Catchments. If the complex challenges of water catchments are to be managed effectively while supporting farm businesses and food production, different types of knowledge must be brought together and the lessons learnt must be applied effectively. This will involve making active two-way relationships within and beyond the research community, drawing in the practical expertise of farmers, land managers and other stakeholders. This includes linking up the evidence generated by the Demonstration Test Catchments with the expertise and experience built up by Catchment Sensitive Farming Officers.

What role does the scientific evidence base play?

Before carrying out scientific investigation, we need to know something of the outcomes we are aiming for, and how the research will be carried out, if it is to come up with the “right” knowledge:

- Are we asking the right questions? For example, does the pollution problem stem from water quality, or from abstraction of water concentrating the pollutants? Have farmers been involved in deciding these questions? Are we using their local knowledge to best effect?
- Who will be using the science and will it produce results that can be used for that specific audience?
- Will the evidence be “local”? How can modelling make it more widely applicable?
- Will the evidence base take into account the economic and social pressures upon farmers?
- Is the research interdisciplinary? Research that only uses natural science may miss the real issues if it is human actions that are the source of the problem.
- How are farmers being engaged? It is particularly important to identify the individuals with whom the majority can identify, rather than concentrating on large agri-businesses.
- How can farmers and/or other stakeholders play a part? For example, would involving farmers in gathering data on their own land help to give the research credibility, as well as being more cost-effective?
- How might the results be applied and communicated?

How do we learn from each other?

We all know something about our environment as we look at it from different perspectives. Knowledge is not the sole prerogative of scientists, indeed those that live and work alongside our rivers often have valuable knowledge that is impossible to obtain from research. We need to find better ways of learning from each other. This is a process often referred to as “knowledge exchange”.

Knowledge exchange is more complex than knowledge transfer but it can be more fruitful. It is a two-way process that engages a range of stakeholders and can produce new knowledge and new understanding of the evidence. It tends to be more long-term and richer than knowledge transfer but it needs careful planning and development of strategies designed to meet the needs of those involved. There are some basic but important underpinning principles for successful knowledge exchange:

- Trust is important and has to be built up over time.
- Communication needs to be clear and honest, even where the news is not good.
- Rather than creating new routes and vehicles for communication, it is often better to use those that already exist.

On a practical level, the Catchment Sensitive Farming Officers have built up a wealth of expertise about what works best. Research evidence from projects such as the Demonstration Test Catchments should be used to continually test and refine these methods and to make them locally relevant:

- Language is always important. All professional groups and organisations use shorthand but this can seem incomprehensible and exclusive to outsiders and creates barriers.
- Information needs to be presented in accessible forms and visual aids can be an asset. Farmers are well-used to reading graphs, for example, and these can convey statistics in a simple but powerful manner.
- More high-tech computer based tools can also be effective, particularly for communicating with agri-businesses, but they are not appropriate for every audience. They may alienate some individuals and seem over complicated or “a waste of tax-payers’ money”. Simple approaches are sometimes best.

- Traditional methods such as newsletters can be effective with some groups but they need to have interesting things to say and a regular, well-established audience. Articles in an existing publication may be more effective. In either case, snippets of genuinely up-to-date science, that is relevant to their local area, can help to engage farmers.
- Practical considerations about how to reach farmers are very important. They are busy people and it is difficult to entice them to events. It may be possible to piggy-back onto existing meetings that they attend, or put on information stalls at places such as the local mart.
- One-to-one discussions are expensive but very effective.
- It is essential to have the right communicators, with the right background knowledge, who can command respect. This respect needs to be mutual. Farmers are the experts on their own land.
- Farmer-to-farmer is a powerful communication route and those who have adopted mitigation measures on their own farms are often the most useful advocates.
- Farm walks and field visits with practical demonstrations may also be more attractive than a powerpoint presentation for people who spend their professional lives outdoors.
- Farmers may actually welcome a rare opportunity to step back from their day-to-day routine and take a fresh look at their practices.
- The most effective way of attracting a farmer’s interest is to demonstrate that changes could be economically as well as environmentally beneficial.

For communicating with policymakers:

- Timing is key and researchers may have to compromise. It may be better to provide data with some caveats, rather than miss the opportunity while waiting for peer review.
- It may also be appropriate to combine different types of evidence. Observations from stakeholders might not meet the standards required for an academic publication but could be invaluable.
- Evidence triangulated from different sources may be more robust than data from a single source.

How do we plan for mitigating diffuse pollution in practice?

In an ideal world, we aim for action that provides a quick and positive result that can make a good impression. In the case of *E coli*, for example, this can be achieved virtually overnight by erecting a fence to keep livestock away from water courses. For other types of pollution the improvements will be much more long-term, but good planning will help:

- Trusted individuals/organisations have an important part to play in communicating with farmers. Innovators among the farming community can also provide a lead. Seeing a respected neighbour making changes will often provide the catalyst.
 - A good relationship, built up over time, between an adviser or officer and a farmer will pay dividends. A farmer may be unlikely to undertake every possible change in a single year but if one or two can be achieved now and shown to be beneficial, next year he/she could be more willing to look at additional measures. If the officer knows the farmer they can negotiate these changes over time and build on what has already been achieved.
 - The Defra User Guide to mitigation measures provides a wide range of potential actions. On the ground an experienced Catchment Sensitive Farming Officer will use their own local knowledge to narrow down the possibilities to a shorter list appropriate to their own area, and to the needs of the individual farmer. They will then use that list as a basis for discussion.
 - Multiple benefits can be demonstrated from small changes and this helps to reinforce the positive messages. For example, fencing can be shown to help reduce *E coli* and sediment run-off, is good for the fish population and may mean less poaching of the ground and less foot rot for the livestock.
- Costs and benefits can be two-way. Capital grants can help farmers with infrastructure costs and free soil-sampling will help with nutrient planning.
 - Farmers have a wide range of factors that they take into consideration beyond the obvious economic ones. That should be borne in mind during any discussion. Such considerations might either narrow their choices or, indeed, lead them to consider making much bigger changes than might be anticipated.
 - Examples of success will be a useful tool in helping farmers to plan. It is also useful to be able to demonstrate instances where mitigation measures have helped to resolve disasters. Again, hearing these experiences related by other farmers is very powerful.

What needs to change?

There are some actions from government and its statutory bodies that could help to engage the willing farmers and make it more difficult for the unwilling to opt out:

- There should be better funding for knowledge exchange, which is generally not included in research grants.
- Young farmers, agricultural colleges and agricultural students in universities should be targeted and engaged in the debate about mitigation.
- Funding for work with farmers needs to allow for repeat engagement so that officers can build up positive relationships. It isn't feasible to expect farmers to take all the action required in a single year.
- More training opportunities in science, linked to open days at Demonstration Test Catchment sites, could be useful for Catchment Sensitive Farming Officers and provide them with up to date evidence for using in their communication with farmers.
- Trusted mediators can be helpful but there needs to be clarity about the role of advisors who have vested interests, such as agronomists employed by seed merchants.
- The large supermarkets could have a major role to play in environmental protection but tend to favour their own labelling schemes. If they were more positively engaged and willing to promote greater transparency about the connection between food production and diffuse pollution this would be a useful step towards mitigation.
- More incentives for farmers to work together would be helpful in tackling problems at catchment scale.
- There does need to be credible regulation. Although legislation exists, penalties are seldom applied. Better inspection and enforcement would be welcomed by farmers who are putting the required mitigation measures in place, and help to prompt action among those who lag behind.
- But legislation cannot solve all the problems of diffuse pollution because the effects are so long term.

What further steps are required from Demonstration Test Catchments?

Demonstration Test Catchment teams need to consider how their research can begin to respond to the specific needs of Catchment Sensitive Farming Officers.

For example they could:

- Consider the design of combinations of measures to give a required level of benefit for addressing diffuse pollution.
- Host events to demonstrate measures to Catchment Sensitive Farming Officers and farmers.
- Provide guidance on best practice, design and costing of implementation and maintenance of measures such as buffer strips etc.
- Test and develop novel measures to add to Catchment Sensitive Farming Officers' toolkit.
- Provide access to a resource pool of researcher expertise: both signposting to readily available information and, where appropriate, advice tailored to specific circumstances.

Useful resources

The Demonstration Test Catchment project is currently working in three river catchments across England:

The Eden in Cumbria

The Wensum in Norfolk

The Avon in Hampshire

Other useful websites:

Learning from Demonstration Test Catchments

Catchment Sensitive Farming initiative

Natural England

Environment Agency

Living With Environmental Change

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