

Catchment Matters

Farming Edition

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The newsletter from the Parrett Catchment Project

Welcome

Welcome to the new *Catchment Matters: Farming edition* from the Parrett Catchment Project (PCP) - the bulletin for farmers, landowners and everyone who wants to hear about the work underway in the Parrett catchment to reduce flood risk and bring water levels under control.

Catchment Matters is a quick, breezy read to find out about the Parrett Catchment Project, what we have been up to, current lobby issues and how to get involved. Dialogue matters; please do give us feedback and suggestions for future editions. Contact Nickie Harris on 01823 355281 if you would like to be included on the stakeholder mailing list.

Foreword from the PCP Chairman, Anthony Gibson



Anthony Gibson

I am pleased to be able to report that the Parrett Catchment Project has developed real momentum in the last few months. The experimental work on reducing run-off from maize ground is yielding clear conclusions, detailed work is under way on all of the "Farming Water" projects designed to slow the rate at which flood water reaches the main rivers, and the Parrett Sluice is firmly back on the agenda.

The significant thing about our programme of work is that it illustrates how the PCP is tackling the flood problem from all directions. There is no doubt that the time it takes for heavy rainfall on the hills surrounding the catchment to reach the main rivers has fallen dramatically over the last 25 years or so. Where once it would take 36 hours for flood to follow deluge, now it is little more than 12. That adds huge pressure on the flood defences. Restoring the time lag to something closer to what it was in the old days would make a huge difference.

The experimental work which has been led by Farming and Wildlife Advisory Group (FWAG) and Institute of Grassland and Environmental Research (IGER) on the Dillington Estate, Ilminster has demonstrated the huge difference it can make if land is left after maize in a condition in which it will act more like a sponge and less like a sloping roof. It won't stop the water reaching the rivers, but it does mean that rain percolates down through the soil and into the drains, rather than washing straight off the top, taking large quantities of valuable topsoil with it.

Quite apart from local importance of this work, it may also have significance in terms of the EU Water Framework Directive, which is due to descend on us shortly, and of the cross-compliance conditions likely to be attached to the new "Single Farm Payments".

Being able to adopt practical, farmer-tested, cost-neutral techniques for reducing run-off and tackling "diffuse pollution" could help to avoid much more restrictive, expensive controls imposed from outside. That isn't all about how farm land is managed, of course. Housing and industrial development in the upper catchment has also played a major role in speeding the passage of the water. The PCP has been involved in tackling that through the guidelines which now restrict development in the floodplain.

But in terms of what is there already, what is done is done. You might be able to turn a field into something approximating to a sponge, but you certainly can't do that with a slab of concrete!

Which is why the work sponsored by the PCP on intercepting the flood water so as to delay its arrival in the main rivers, is so important. We have two large schemes for temporary shallow storage of floodwater on the stocks, at Creedy Bridge on the Parrett, and in the Isle Valley. Between them they have the capacity to detain 250,000 cubic metres of floodwater. That may sound like, almost literally, a drop in the ocean compared with the 30 million cu m with which the Levels will be awash in a major flood. But the point is that it could be enough to knock off the flood peak, which always does the most damage. Together with our 4 other floodwater storage schemes they can make a real difference.

But to regain control of the water on the Somerset Levels will involve tackling the problem from both ends. Sea level rises, increased storminess and the growing risk of tidal surges – all heightened by climate change – make tackling the danger from the sea ever more important.

That is where a Parrett Sluice needs to come in, and not just because it could have the potential to protect the 11,400 properties which are at risk in Bridgwater and the surrounding area from a severe tidal flood event. A Sluice could also enable the water level in the Parrett through Bridgwater and for several miles upstream to be kept high, so improving the appearance and the amenity of the river and its surroundings. The potential for economic regeneration and power generation that this offers appears to be huge. A Parrett Sluice Partnership has been set up to debate the many facets, address any downsides, arrive at a consensus, and then champion the final project.

So, one way and another, there is quite a lot happening in and around the Parrett Catchment at the moment, and it is all very much for the good of the area and, above all, for the people who live and work there. Because, ultimately, that is what we are all about!



The Somerset levels

Demonstration projects highlight methods to reduce surface runoff and erosion



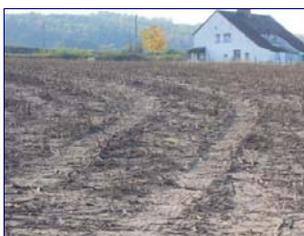
Soil runoff from bare compacted fields deposited on roads



Late harvested crops require heavy harvesting machinery



Soil in surface runoff acts as a carrier for nutrients and pesticides



Late harvest in wet conditions led to 3 X more runoff than harvested in dry conditions



Timely green cover crops reduce runoff

Through the Parrett Catchment Project, the Environment Agency and the EU (through the *Joint Approach for Managing Flooding*) have funded work to demonstrate how land management can reduce the risks of flash flooding and run-off from fields following the harvest of maize.

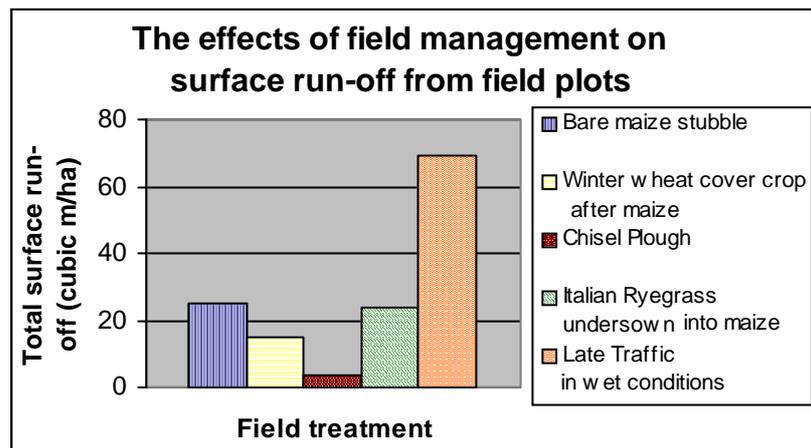
Last winter, run-off was measured from a series of plots in a field with a high risk of erosion. The plots were treated in different ways to find out how infiltration rates and run-off vary with different types of soil and land management. The amount of run-off varied dramatically across the different treatments - see the graph below for the results.

Surface run-off from bare compacted fields

exposed to heavy or prolonged periods of rain can cause flash flooding and with it disruption to highways, misery to homeowners and degradation of watercourses. The soil lost through surface run-off acts as a carrier for nutrients and pesticides that causes contamination and watercourse nutrient enrichment.

Late harvested crops, such as maize, root crops and vegetables, require heavy machinery for harvest often in wet conditions increasing the risks of soil compaction, surface run-off and soil erosion.

The demonstration work has proven that these risks can be minimized by diligent management and planning. The graph below summarises the findings.



There was 20 times more run-off from maize stubble after late harvest in wet conditions compared to chisel ploughing after early harvest. Over a five-month period this equates to a soil loss of 1.4 tonnes/ha.

Late harvest in wet conditions leads to:

- 3x more runoff than harvest in dry conditions
- Compacted soils that are less permeable to water
- Increase in soil loss with vast potential nutrient losses from slurry applications

Chisel Ploughing after harvest leads to:

- Improved water infiltration into the soil
- Reduced run-off
- Soil and nutrients retained for following crops.
- Reduced impacts of high-risk crops on the surrounding area

Timely establishment of green cover crops such as Winter Wheat or Italian Ryegrass leads to:

- Reduced run-off and soil losses from the field.



Explaining the lysimeter demonstration to farmers during a workshop led by FWAG

In conjunction with farmers within the Parrett Catchment, FWAG are delivering advice on Soil Management Planning.

Jo Oborn and David Cliffe are soil specialists at Somerset FWAG. Please contact them for further information on 01823 355427.

The Parrett Tidal Sluice - if it goes ahead what could it mean to you?

There's been a lot of talk about the Parrett Tidal Sluice recently. In fact, it is a subject that has been under consideration for hundreds of years. Most other rivers in this part of Somerset have some form of tidal barrier that prevents the entry of saline water from the estuary and gives some protection from high tides.

As an active partner in the Parrett Catchment Project, the Environment Agency leads a number of the component projects that form part of this catchment-wide approach to flood water management, one of which is looking at the option of a Tidal Sluice near Bridgwater.

As with any major project, there is a huge amount of preparation work needed before we can get seriously close to construction. At present we have started the first feasibility study. This looks at various options for the type of sluice structure and the benefits of different operating regimes together with possible locations. The study also starts to try to understand the significant environmental impacts and potential for enhancements. We are looking at information from other tidal structures around the country to find a short list of possible options for the Parrett.

The main consideration is the financial viability. Capital expenditure such as this has to go through a rigorous cost benefit analysis in order to justify the allocation of public money from Defra. An early indication from our work is that the sluice does not have high national priority in terms of flood defence funding alone and will require commitment from partners before it can proceed.

Logically, a sluice would have benefit in relation to changing climate. If the sea level rises and we experience increased stormy weather, the sluice could offer protection to Bridgwater from tidal inundation and reduce the risk to some areas upstream of Bridgwater from tidal and river flooding. The cost and effectiveness of other options to achieve this has to be compared with the sluice option.

Somerset ahead on soil issues

NFU President Tim Bennett, in response to the recent DEFRA State of Soils Report, stated: *"Farmers already invest heavily in managing and protecting their soils but further improvements can be made to meet forthcoming legislation to protect the water environment and improve profitability of farms. Advice and information informed by robust research is essential."*

Somerset farmers, with guidance from FWAG agronomists, have taken a proactive approach to the management of soils. Farm specific Risk Assessments have enabled farmers to review crop production and cultivation techniques in order to improve the water retentive qualities of soils in the catchment. The adoption of best practice guidelines has been supported through farm based research projects designed to enhance knowledge of compaction.

Experience gained in the management of high risk

We must stress that construction of a tidal sluice in Bridgwater is not intended to drain the Somerset Levels and Moors. It will enable us to have better control over water levels and better water management during flood events. A structure that keeps out the tide will create more 'space' in the Parrett river channel to enable us to pump water off the moors earlier if a flood occurs.

If we have a system whereby we can evacuate water more effectively, this means that we could be in a position to hold more water on some of the moors during 'normal' flow conditions. Therefore the likely scenario is that there could be more water on the moors which would help to achieve favourable status for the Special Protection Area.

So, how will this affect you, our farming community managing land in the Parrett catchment? The chances are that the majority of your businesses will not be affected very much although this does depend on where your land is.

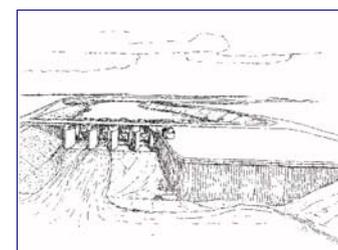
Upstream of the Parrett and Tone confluence near Burrowbridge, the sluice is not anticipated to have an impact. It could reduce tidal flooding in Bridgwater and the impact of river flooding upstream of the town in the Levels and Moors, so if your land is around here you should benefit if a sluice is built. A sluice is likely to facilitate improved water level management and increased distribution of water around moors. Agreements for landowners to hold water on their fields would be through systems that replace those we have now – the ESA payments.

And finally.... it is still early days in this 21 Century chapter of the old 'sluice across the River Parrett'. There is an equal chance that a sluice may or may not happen. March 2005 is decision time. By then we will have sufficient information to decide the best way forward!

"How will the sluice affect you, our farming community managing land in the Parrett catchment?"



Dunball, outside Bridgwater - possible site of the tidal sluice



Artist impression of the tidal sluice

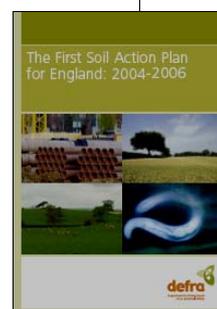
erodible soils has meant that Somerset farmers are already implementing some of the proposed cross compliance conditions. Other measures under consideration will be subject to practical evaluation in a range of demonstrations planned for 2005/6.

The First Soil Action Plan for England: 2004-2006. DEFRA's range of environmental standards for farmers claiming CAP payments will include requirements to reduce erosion and maintain soil structure. There are also proposed measures to protect soils under the new Environmental Stewardship Scheme.

The State of Soils Report from the Environment Agency covers the main functions of soil and highlights the issues that need to be addressed. It looks at the quality of soil, the pressures acting on it and the impacts that these pressures are having on it.



The state of soils in England and Wales



Woodland planting to alleviate flooding

Woodland planting along river corridors contributes to delaying runoff into tributaries, reducing soil compaction and increasing water penetration in the riparian strip, reducing diffuse pollution and trapping wood debris in tributaries, which reduces floodwater flows.

The PCP's funding from Europe has enabled the first catchment-wide research into location factors where woodland planting would assist in alleviating run-off and related flood problems.

English Nature, together with the Farming and Wildlife Advisory Group (FWAG), Somerset County Council and the Forestry Commission are translating the research report's findings into action on the ground. Part of this project has been a report on a new woodland concept to help relieve flooding.

Gwil Wren from English Nature explained "We have

welcomed working with partner organisations on the establishment of small woodlands in the upper catchment area."

"This year we are acting on the finds of the woodland report and will be planting 25 hectares of new trees in key locations along rivers in the Parrett catchment and monitoring runoff from these sites. We have identified the areas to be planted in the future and if these trials are positive we will be looking to expand the project"

Ben Thorne, FWAG Team Leader said, 'Although the aim of this project is to establish how effective woodland is at reducing run off and reducing flooding, it also shows how farmers are willing to engage over issues of multi-functional land use, in this case Farming Water, rather than just using land for food production.'



Arable land converted to woodland in the Parrett catchment; stabilising soils at high risk from erosion.

Flood retention schemes on farmland

PCP is currently developing six flood retention demonstration schemes in the catchment. These will all be operational by the end of 2004.

Each scheme is unique, designed to account for the site characteristics, (topography, hydrology & ecology) and have been subject to landowner agreements and legal procedures (licencing, approvals and consents).

Simultaneously the PCP is lobbying DEFRA for Farming Water payments to be included in the new agri-environment schemes.

1. Creedy Bridge, Norton sub Hamdon

A floodplain scheme on the River Parrett designed to provide controllable storage on 15 ha of existing flood prone land. A high impact project with low maintenance costs. The continuation of normal farm operations is an essential feature. The scheme has been redefined to provide the maximum possible retention within the constraints of the Reservoirs Safety Act and is set to cost c. £33,000. Habitat gain: wet woodland, wet grassland and the potential to develop wetland features.

2. Bower Hinton Farm, nr Martock.

A pond type scheme adjacent to the Parrett to capture and retain water from the local farm drainage system. Volunteered by the owner Mr Patrick Palmer. The scheme will cover approx 0.4 ha and provide an additional 5,000 cu m capacity at a likely cost of £37,000. The farmer will also be using it for irrigation purposes which may simplify the approvals process. Habitat gain: open water and reed bed and wetland features.



Location plan for the scheme at Bower Hinton Farm

3. Balham Hill Farm, Chiselborough

This is a floodplain scheme which will involve the reinstatement and reinforcement of a 250m length of existing boundary hedge / bank. This currently impedes floodwater flow but is deteriorating. In the absence of the proposed works is likely to become ineffective over the course of the next few years. The area affected is about 1 hectare and the vol. of water involved is some 1,200 cu m. This is likely to be a low cost scheme (c£5k), not requiring planning permission.

4. Moortown Farm, Curry Rivel

A high-impact floodplain scheme in the Isle Valley which could provide extended retention for more than 200,000 cu m of floodwater on over 30 ha of land for limited capital cost (estimate £12,000). Two landowners are involved here.

5. Voker's Bridge, near Wellington

A pond type scheme in the River Tone catchment. The facility will intercept overland flooding from a prolific stream draining runoff from the Blackdown Hills. The site is adjacent to M5 J26 and thus a good site for demonstration purposes. The landowner is very enthusiastic and in fact suggested the location for assessment. The likely cost is circa £35,000. Initial concept envisages a capacity of around 6,000 cu m and an affected area of 0.4 ha. Habitat gain: open water, marginal planting and possible reed bed.

6. Parsonage Farm, near Ashill

A small scale pond-type scheme in the River Isle catchment on an SCC owned farm. The facility will capture water from an adjacent upland stream. The size to be limited to 0.1 ha to contain costs and fit well with the scale of this small farm. Likely storage capacity 1,000 cu m at a likely cost of £20,000. A small scheme such as this is likely to prove attractive to farmers. Habitat gain: open water, marginal planting and possible reed bed.

Sharing information across the partnership

www.parrettcatchment.info

Sharing information between stakeholders is a key benefit of partnership working, but it's something that, in practice, is not so easily achieved. We have therefore decided to use the PCP website as an information source, where stakeholders can submit and access useful information, as well as up to date progress on the project, relevant government policy changes and more detailed technical information.

As a result we have revamped the PCP website where you will now find a huge amount of news and information.

The website address is: www.parrettcatchment.info and the site itself will be under constant review to keep pace with changes. The website contains:

- Updates about projects & progress of PCP's Action Strategy components.
- 'The Information Exchange': information gained through meetings with our Dutch and German Waterboard partners in the JAF project, plus useful information submitted by partners. *Please submit any info. you think would be useful to share to nharris@somerset.gov.uk*
- The latest news - press releases, articles, photos and newsletters.