Benefits of Natural Flood Management?

Natural flood management (NFM) structures should be designed so that they do not significantly impact on farming. Many of these measures are likely to provide additional benefits to farm businesses and to the general public.

Benefits for land managers

- Reduced flood risk to productive farmland and farm infrastructure
- Improved soil fertility and reductions in soil loss, pesticide and fertiliser runoff
- Reduced impacts of drought as healthy soils retain water for longer in dry periods
- Improved drainage of waterlogged areas preventing prolonged inundation of farmland
- Bankside fencing reduces risk of waterborne disease and lameness in stock
- Hedges and tree planting can provide shelter and shade for stock
- Reduced erosion of tracks and river banks
- Potential for income generation for the landowner (from commercial woodlands and short rotation willow coppice)

Benefits for the wider landscape and community

- Improved water quality
- Improved habitat for wildlife
- Economic benefits from higher landscape quality, including tourism and recreation
- Some of these measures, such as woodland creation and restoration of blanket bog habitat, absorb carbon from the atmosphere and store it, thus contributing to climate regulation.

The Evidence

The Environment Agency has produced an evidence base which summarises current research on the effectiveness of NFM techniques. It provides a series of one-page summaries and a range of case studies about each technique. This information is available on the Environment Agency's website: **www.gov.uk/government/publications/working-with-natural-processes-to-reduce-flood-risk**

Cumbria Innovative Flood Resilience Programme

The Cumbria Innovative Flood Resilience (CiFR) Programme is looking to improve the flood resilience of small rural communities that may have already suffered multiple flood events for which traditional flood defences aren't financially viable.

To do this, the CiFR Programme is:

- Building on existing Natural Flood Management (NFM) work and strengths
- Using targeted NFM to reduce flood risk
- Modelling to identify locations in a range of landscapes to maximise effectiveness
- Focussing effective NFM interventions close to communities
- Identifying funding streams to ensure NFM is attractive to landowners
- Supporting communities to prepare for residual flood risk and climate change
- Putting in place monitoring and evaluation to demonstrate effectiveness
- Using research findings to influence policy and practice

What is Natural Flood Management?

Natural Flood Management (NFM) involves implementing measures to restore or mimic natural functions of rivers, floodplains and the wider catchment, to slow water down in the landscape & reduce the rate at which water runs off the landscape into rivers. NFM has a wide range of options that can be sited across the catchment.

NFM looks to deploy a combination of interventions, of the following underlying mechanisms.

Slowing water by increasing resistance to its flow – for example, by planting hedgerows & trees, blocking grips on peatland, having areas of longer grass, installing woody dams or creating buffer strips.

Storing water by creating & maintaining capacity in bunds, ponds, ditches, swales or floodplains so they fill during rainfall events and empty slowly over 10 or so hours.

Increasing soil infiltration: Improving soil structure & its biology can increase water absorption, significantly increasing the volume of water that can be stored in the soil. This will make also makes saturation less likely, potentially reducing surface runoff & improving drought conditions.

Intercepting rainfall: Vegetation, especially trees, intercept rainfall so it is slow to reach the ground. Water is also evaporated from the trees when they are wet during storms, reducing the volume of flood water that causes flooding. Trees can reduce the amount of water reaching the ground by up to 45%.

Caulder I.R, Reid I., Nisbet T.R. and Green J.C. (2003) Impact of lowland forests in England on water resources: Application of the Hydrological Land Use Change (HYLUC) model. Water Resources Research 39, 1319

Additional information

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A practical guide for farmers can be accessed here by scanning the QR code:

Options for Natural Flood Management

Key

1. Peat restoration and storage grip blocking
2. Cross slope woodland planting
3. Beavers
4. Wetlands
5. Earth bund
6. Tree planting
7. Sediment trap
8. Wooden barriers
9. Flood plain woodland
10. Flood plain storage
11. Dry stone wall
12. Stock rotation
13. Riparian tree planting
14. Leaky stone barrier
15. Leaky wood dams
16. Soil aeration
17. Meandering river
18. Mob grazing
19. Herbal ley
20. Kested hedgerow