



Testing the erosion resistance of vegetated floodbanks

Science Summary SC030228/SS2

Scientists from L A B Coastal have developed a portable measurement device for use in testing the erosion resistance of vegetated grass banks – a vital element of floodbank management. Use of the device involves subjecting small test areas of the bank to running water to determine the point at which significant soil erosion occurs. This information can help to determine the optimum approach to erosion protection for the site.

The project was an extension to the flood embankment management trials carried out by the Environment Agency at three sites in its Anglian Region between 2003 and 2007. In 2008, the erosion measurement device was used at the same sites (Ely Ouse, Reach Lode and Billingborough) to test the erodibility of the vegetation cover in the winter and the summer under most of the management treatment options tested during the earlier trials (e.g. number of mowings per year, whether the arisings were removed or left on the bank).

The test areas included plots where the vegetation was relatively poor with bare patches and those where it was good. The testers concentrated on poor areas because these are most likely to fail and are thus the weak points of any floodbank. During the summer series of tests, some geotechnical parameters in the wetted areas were also measured to examine the relationship between soil strength, erosion and other variables.

The results showed that, although cutting at least once a year contributed significantly to bank performance, there was little direct evidence that more frequent cutting was beneficial. There was some evidence that removal of arisings was helpful if the cutting frequency was low (mainly because uneven distribution of a dense layer of arisings can lead to the development of bare patches). There was little evidence that high cutting frequencies contributed greatly to erosion resistance. Other factors apart from vegetation cover influencing erosion included small mammal activity (e.g. moles and voles), soil structure and moisture content, the extent of bare ground and vegetation type.

The results of this research will allow the Environment Agency and others to better manage vegetation cover on embankments to improve their resistance to erosion by flood water or high water levels.

This summary relates to information from Science Project SC030228, reported in detail in the following output:

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