Improving water quality on the Elveden Estate by using silt traps

With thanks to ASDA

ELVEDEN

Elveden Estate,
East Anglian Brecks

Size: Over 9,000 hectares (farmland extends to over 4,900 hectares)

Location: Breckland, Norfolk-Suffolk border

Main crops: Onions, potatoes, carrots, parsnips, cereals (rye, wheat and barley)

Topography: Some gentle slopes

Soil type: Sandy soils, free-draining and low moisture holding capacity

Managing soil and water on the Estate

The way that land is managed can significantly affect how vulnerable it is to environmental damage and erosion. For example, compacted soil is less able to absorb water, so run-off into nearby watercourses is increased.

Being located on Breckland's sandy soils, run-off can be a problem due to a low water holding capacity. This can make its way off the farm via tracks and tramlines, where it has the potential to reach the River Lark – an internationally rare chalk river, containing a diverse range of flora and fauna (Figure 1).

Using surface flow pathway maps to identify where run-off is most likely to occur, mitigation work took place in summer 2018 (Figure 2). A range of silt traps were installed including track interceptor drains and field corner bunds (Figures 3 - 4).

How do sediment traps work?

The traps capture and slow down run-off, which enables the sediment solids to settle out. This is important as the solids can have pollutants such as phosphates attached to them.

The traps are maintained by removing the accumulated sediments and any attached nutrients. This can then be returned to the field where it will benefit the farm.

Figure 1. **The River Lark**

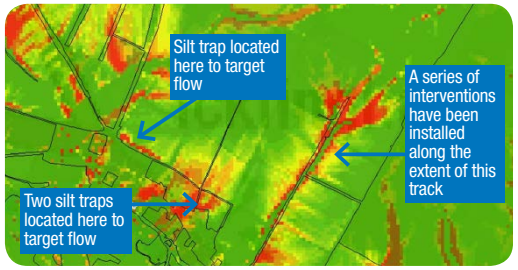


Figure 2. **Surface flow pathway map (SCIMAP) – Red and yellow 'flashes' indicate where runoff is most likely to occur.**

Figure 3. **Corner silt trap along field edge**

Figure 4. **Track grip directing run-off into a silt trap**

Water stewardship awareness

Important steps to reduce pollution from agriculture and to conserve water had already been employed by the farmer including:

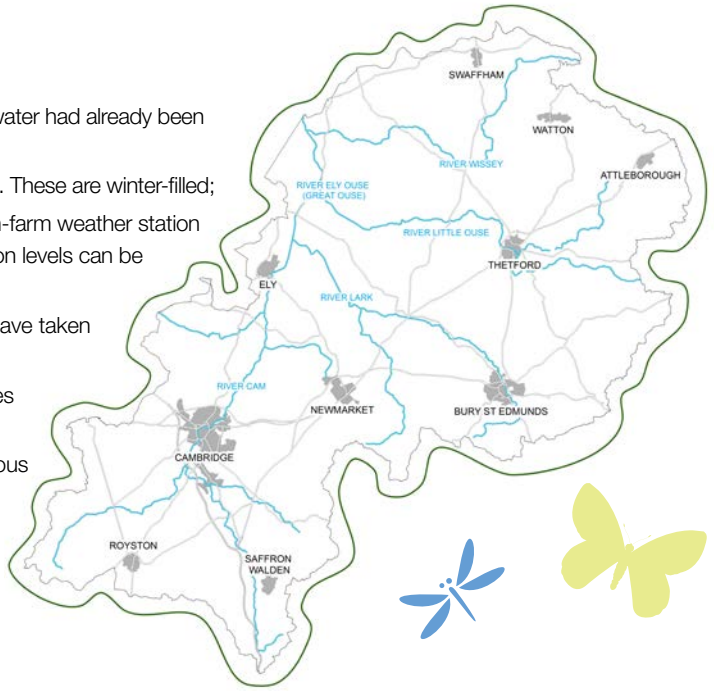
- Two 400,000 cubic metre reservoirs have been constructed on site. These are winter-filled;
- Moisture probes are used to assess soil moisture levels, and an on-farm weather station predicts rainfall and plant transpiration rates. Consequently, irrigation levels can be adjusted, and water wastage avoided;
- Assessments of headland and edge management best practice have taken place e.g. buffer strips have been introduced for better soil health;
- Green cover crops are sown in the Autumn to reduce nitrate losses from the soil and reduce soil erosion; and
- Run-off trials have been carried out to monitor the benefits of various tramline disruption machines and to test different water irrigation regimes for reducing run-off.

Did you know that sediment traps can:

Reduce flood risk - by filtering out sediment, providing storage of floodwater and slowing the flow.

Reduce eutrophication – by limiting phosphate entering the river, the risk of algal blooms is reduced. This ensures that there is enough oxygen and light penetrating the water.

Improve aquatic habitat – by reducing sediment deposition in the channel, riverbed gravels are maintained. These provide an important habitat for river flies and fish such as brown trout.



Acknowledgements

This project was carried out as part of the Water Sensitive Farming initiative (WSF), which aims to keep sediment, nutrients and water in the field and out of watercourses, thus enhancing farm productivity and water quality and quantity.

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