Case study

Shelterbelts can protect soil against erosion

May 2017

WOODLAND TRUST

How tree planting saves the soil

Strategically positioned shelter belts can protect topsoil against the dangers of erosion from wind and rain, improving the productivity of a farm.

Nottinghamshire farmer Richard Thomas can recall more than one occasion when he stood watching his livelihood literally wash away before his eyes. The problems of water and wind erosion were worsening at his farm.

Haywood Oaks Farm, near Blidworth, stands on rolling hills that expose its 1,000 arable hectares (2,500 acres) to the elements. Strong winds were stripping valuable top soil from the land, while intensive rainfall was washing away the the most fertile soil.

"There were instances where we could literally see the soil leaving the farm and once that happens, we've lost that forever," said Richard. "We knew we really needed to take steps to keep that in the field – we needed to slow the water so that we could ensure the sediment and nutrients stayed on the farm and that we weren't impacting on other land, local people and properties. It is also very important that we try to collect as much rainfall as possible on our land to filter into the aquifer below. This has a two fold benefit of avoiding floods on my own and neighbours property and keeping the water in my own aquifer for use in irrigation later on our sandy soils."

So Richard and his farm manager, Andrew Bainbridge, introduced a series of measures to combat wind erosion. They planted nurse crops to protect the soil; and they restored 30km of hedgerows to act as windbreaks. Then, to stop soil from being washed away by heavy rainfall, they introduced six metre field margins, dug ridges and converted field corners to grass in order to keep water on the farm. James Thomas (Richard's son) is now trialling a new technique of only tilling the strip where seeds are to be planted which is helping reduce soil erosion and cultivation costs.

> "It is essential to target these problematic areas by planting trees so when heavy rainfall occurs the trees will encourage infiltration and prevent the water gathering pace and causing damage."
>
> **James Thomas**

The numerous shelter belts were planted as part of a Higher Level Stewardship scheme, in a bid to address both problems of wind and water erosion.

But in the face of increasingly extreme weather conditions, with rainfall more than doubling in intensity on the farm over the past few years, Richard, James and Andrew felt compelled to take even more robust action to protect their soil and the future of the farm.

Solution

The solution lay in a major tree planting programme on pockets of poor condition land where no crops would otherwise grow. Working in partnership with a Woodland Trust adviser, they identified areas of the farm where trees could deliver protection from erosion improving the productivity of the business.

The result saw 7,550 trees planted on a total area of just three hectares. The Woodland Trust subsidised the cost of the trees and guards, so the benefits of the strategic planting will soon outstrip the investment.

Given the farm's name, it was little surprise to see oak, as well as holly, rowan and birch, among the mix of new trees. These species already grow at Haywood Oaks and thrive in the local soil.

The trees were planted in 10-metre wide shelter belts, with two metre spacing, alongside two rows of shrubs on the field side of each belt. The Woodland Trust also provided stakes, guards and biodegradable mulch mats to help with the early maintenance of the new saplings.


Andy Trynier

"In years to come we'll have these tree belts established and in need of thinning which will produce woodfuel to help feed our biomass burner."

James Thomas

The shelter belts will perform two functions. Firstly, they will protect soil and crops against the impact of intense rainfall by providing deeper rooting trees. Additional organic matter from leaf litter will improve soil stability and structure enabling surface water run-off to percolate into the soil rather than pour off the land. Secondly, the trees and shrubs will act as a barrier against the wind, buffering the land against strong gusts that threaten to blow away both the top soil and recently planted crop seeds.

Finally, the new trees at Haywood Oaks Farm make a powerful statement to the neighbouring community about the farm's commitment to the environment, to wildlife and to the local area. For Richard, James and Andrew, it's a low cost way to future-proof every aspect of their arable farming.

Why trees are vital for arable farms?

- Trees and shrubs act as a buffer against the wind, preventing valuable topsoil from blowing away.
- A shelter belt of trees and shrubs can trap water, stopping soil and sediment from washing off fields. The frequency of intensive rainfall has doubled in recent years.
- Trees and shrubs can be strategically planted on low quality land on which it is difficult to grow economically viable crops.
- Subsidies are available towards the cost of the trees.
- Planting new woodland makes a powerful, positive statement to the local community about your farm's long-term environmental commitment.

FACT FILE

Farm: Haywood Oaks Farm
Location: Nottinghamshire
Size: 1,000 hectares / 2,500 acres
Farm type: arable
Crops: spring barley, potatoes, carrots, sugarbeet, maize, pigs and fallow
Topography: rolling hills
Soil: sandy
Challenge: substantial soil erosion from rainfall and wind
Solution: 7,550 trees planted with help from the Woodland Trust
Land committed to new trees: 3 ha

To find out more about how we can help you to plant trees on your farm:
visit woodlandtrust.org.uk/plant
call 0330 333 5303

WOODLAND TRUST

The Woodland Trust, Kempton Way, Grantham, Lincolnshire NG31 6LL.
The Woodland Trust is a charity registered in England and Wales no. 294344 and in Scotland no. SC038885.A non-profit making company limited by guarantee. Registered in England no. 1982873.