

TREES AMELIORATE IMPACTS OF SHEEP GRAZING ON SOIL COMPACTION AND WATER INFILTRATION

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Previously research here at Pontbren, reported at the 2003 Farm Woodland Forum meeting, and subsequently published in *Soil Use and Management* **20**, 357-359 (2004), showed much higher infiltration of water inside the fence lines of newly established tree strips than in adjacent grazed land. While this research also suggested even higher infiltration rates in older tree strips, the relative importance of stock exclusion and the presence of trees remained unclear.

Here we report new data on infiltration and compaction in grazed plots with and without sycamore trees (*Acer pseudoplatanus*) and in forest plots where stock had been excluded, collected from the Henfaes silvopastoral experiment at the University of Wales, Bangor, which is part of the national network of silvopastoral experiment sites. The measurements, made using standard double ring infiltrometers and a sophisticated penetrometer, were taken earlier this year, when the trees were 12 years old. The results show much higher infiltration of water and lower surface compaction in forest plots than grazed plots, but also higher infiltration and lower compaction in grazed plots with sycamore trees at 400 stems per ha than in grazed plots with no trees. Compaction was detectable in only the top 2 cm of soil.

This shows clearly that the presence of trees on grazed land ameliorated the impact of high sheep stocking density on soil compaction and infiltration, indicating how trees can make productive agricultural systems more sustainable.