A long-term study of peat subsidence due to afforestation and drainage

Afforestation of peatland causes the ground surface to subside. This has important implications for forestry, particularly for drainage design and maintenance requirements. It can also aid our understanding of how afforestation affects the carbon balance.

Contributory mechanisms in the subsidence process include consolidation, compression, shrinkage and oxidative wastage. Only the last of these involves carbon emissions.

This 27-year study follows the progress of subsidence from the time of the initial afforestation and drainage. Subsidence was monitored on transects across afforested plots and across drained but unploughed, unplanted plots. Subsidence of artificial marker horizons in the upper 1.5 m of the peat was monitored to determine volume change with depth. Bulk density measurements for the unsaturated peat layer allowed estimation of peat mass loss due to oxidative wastage and identification of the depth layer in which this occurred.

Russell Anderson
russell.anderson@forestry.gsi.gov.uk