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Regular Articles

The Experimental Earthwork at Wareham, Dorset after 33 Years: Retention and Leaching of Phosphate Released in the Decomposition of Buried Bone

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Abstract

The 33-year section of the Wareham Experimental Earthwork provided a unique opportunity to investigate the retention and leaching of phosphate released as bone rapidly decomposes in a lowland heath environment. The soils are extremely acidic, sandy, Fe-deficient podzols, with naturally very low, though variable, phosphate concentrations. Phosphate released from bone buried (i) on the old ground surface beneath the bank (â€œturf environmentâ€) and (ii) within the sands of the bank (â€œsand environmentâ€) was found to have leached very rapidly. Indeed, only one of

200 samples from the two burial environments shows signs of phosphate enrichment. The higher rate of bone decomposition recorded in the sand than in the turf environment in previous excavations of the Earthwork is attributed to more active leaching in the better-drained sands. The discovery in the present excavation of one relatively well-preserved piece of bone in the sand environment suggests that certain micro-environments within the sand matrix are more favourable for bone preservation, presumably because of reduced rates of water seepage and/or less acidic conditions. The implications of these findings for soil phosphate studies and bone preservation in acid heathland soils are discussed, and comparisons made with results from the 32-year section of the chalk downland Earthwork at Overton Down.

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Keywords

EXPERIMENTAL EARTHWORK, PODZOLS, BURIED BONE, SOIL PHOSPHATE, LEACHING

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