

Bar Point : Soil Phosphate Survey by N. D. Balaam
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A survey of soil phosphate content was undertaken across the whole area exposed by excavation. It was hoped that the buried soils might preserve patterns of Phosphate enrichment that could be related to excavated features, and that the interpretation of the function or use of individual areas might be better understood by means of such a survey.

Over 400 samples were taken on a 1 metre grid which covered the whole site. The samples were taken from about five centimetres below the exposed surface (Ap or Ah horizon) revealed by the initial clearance of sand.

In the area of the stone spread (context) in Trench B samples were taken from the matrix in which the stones lay. Three transects of closely spaced samples were taken across the line of the trackway (context).

The phosphate determination was by the method described by Dick and Tabatabai (1977). The method produces an approximation of total phosphate content by means of extraction with Sodium hypobromite, and colorimetric determination using the Molybdenum blue reaction. The results of the analysis are plotted in figure as a ratio to the mean value for all samples analysed, and in figure the values are plotted in terms of standard deviations from this mean.

Results

Phosphate values ranged from 130 ppm (dry weight) to 1560 ppm, with a mean of 674 ppm (standard deviation 360).

The lack of comparative samples from outside the cultivated areas means that it is not possible to assess the degree to which the area as a whole has had its phosphate content enhanced or depleted by the use of the fields.

Trench B

This trench covered a very small area and few samples could be taken. Values east of the North - South wall (10) are consistently higher than others in this trench, but the small number of samples does not allow any further assessment to be made.

Trench A

Major anomalies here appear to be associated with archaeological features. The strongest positive anomalies are associated with the large ditch which runs North - South across the trench. The phosphate levels along the length of the ditch are generally higher than elsewhere. The highest values occur on the North edge of the trench where the main ditch (context) cuts through a shallower earlier ditch (context).

The high values in the plough soil above these features presumably relate to phosphorus-rich material in the ditch fills, which has been incorporated in the plough soil. Considerable quantities of B horizon material were included in the ditch fill; it is also relatively rich in organic matter (Macphail 1981), and both of these could be sources of phosphorus for the soil in this area.

As the Phosphate levels probably relate to the nature of the ditch fills, they cannot be seen as being relevant to any interpretation of the function of the fields.

The area of the stone spread (context) has consistently lower than average Phosphate levels. This relative paucity could be due to a number of factors, in particular i) addition of Phosphate-poor blown sand to this layer, ii) leaching of Phosphate from this level, and iii) absence of manuring in this area. The observed effect is most probably due to a combination of all three of these factors, although the high proportion of sand in this soil does suggest that this might be the principal cause.

Samples from the extreme Western edge of the trench also exhibit low phosphate levels. There is no indication that these are due to large quantities of blown sand. A comparison of this plough soil with the one from the Eastern side of the trench, where Phosphate levels show an arbitrary distribution of high and low values, suggests that the Western area has had a lower level of animal/human activity.

Between the two zones of low Phosphate values is an area of slightly above average levels. This may partly relate to the trackway noted in the excavation. From the Phosphate survey it could be suggested that the main

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course of the trackway lay alongside the stone spread, and that the grooves and hoofprints recorded are incidental to the main track.

Analysis of the transects across the trackway were not very helpful, and did not show any clear pattern of Phosphate concentrations.

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