

PHYSICAL CHARACTERISTICS REPORT FOR LAND AT FISHPOOL LANE,
OAKMERE

The site of approximately 20 ha at Fishpool Lane was surveyed in January 1990 using the MAFF Revised Agricultural Land Classification system. The site was augered using a 5 cm Dutch auger at 100 metre grid intersections with additional borings and pits as necessary, to give a density of one boring per 0.76 ha.

Most of the land is mapped as Sub-grade 3a with smaller areas of Sub-grade 3b and Non-Agricultural.

1. Land Use

Most of the site supports long term grass leys with one field of kale and swedes.

2. Site Details and Limitations

2.1 Climatic Limitations

The site receives an average annual rainfall of at least 792 mm although a rain gauge station immediately south of the site receives an average annual rainfall of 828 mm. The accumulated temperature January to June is 1384°C. This combination of rainfall and temperature makes the site eligible for Grade 1.

2.2 Location and Site Limitations

The site lies about 10 miles east of Chester, south of the A45, close to its junction with the A49 (T). The land is ringed by a horse training gallop and has agricultural land or woodland surrounding it. The land lies at an altitude of about 70 metres. The land is

very gently sloping and in most areas gradient is not limiting. Along the western boundary steep slopes and hollows occur and in this area gradient and irregularity have limited the classification of the land.

2.3 Geology and Soils

The area is underlain by glacial sands and gravels on which light textured sandy soils have formed. The soils are free drained and fall into Wetness Class I. Typically black loamy sand overlies dark brown loamy sand at about 30cm, although the depth of the topsoil is as little as 23cm on some ridge tops. A leached horizon occurs below the topsoil in some parts of the site but generally the topsoil is underlain by dark brown loamy sand, which contains up to 20% of very small gravel and in places this horizon is weakly cemented. Stoneless orange red sand occurs in most profiles below 40cm. The stoniness and sandiness of the soils varies only slightly throughout the site and nowhere sufficiently to warrant downgrading the land due to a pattern limitation.

2.4 Inter-active limitations

Soil wetness and droughtiness are affected by the interactions between climate, site and soil. This land is free draining and wetness is not a limitation. Droughtiness is however a serious limitation to the use of the land, because the soils are very sandy. The susceptibility to drought is determined by the difference between the amount of water the soil can hold in the profile (AP), typically 65 to 75mm for wheat and 55-65mm for potatoes on this site, and the medium moisture deficit (MD) which has developed by

the end of the critical part of the growing season. The MD on this site is 86mm for wheat and 72mm for potatoes. The moisture balance (MB), the difference between AP and MD indicates the susceptibility to drought of soils in a given area.

With the exception of the steeply sloping areas erosion would not be a serious problem on this site if the land was ploughed and no further downgrading is warranted.

3. Agricultural Land Classification

The area is mapped as grade 3

3.1 Sub-grade 3a

This grade accounts for 14.9 ha and 75% of the site. The soils are mapped as Sub-grade 3a because of their susceptibility to drought in dry years. The moisture balance of these soils is generally between -5 and -12 for wheat and -10 and -15 for potatoes.

Isolated areas of Subgrade 3b have been included in this Subgrade where sand occurs to the surface. The areas involved are very small.

3.2 Sub-grade 3b

This grade accounts for 3.5ha and 18% of the site. It is mapped over an area of hollows and slopes where gradient and irregularity limit the classification to Sub-grade 3b. The soils are very similar to those elsewhere on site although the stone content between 30 and 45 cm tends to be higher and the profiles are often more cemented within the stony horizon. Water occurs

in some of the hollows where a sandy clay loam or clay loam base causes a perched water table. These wet areas are too small to map or work separately.

3.3 Non-agricultural

This classification accounts for 1.4ha and 7% of the site. It is mapped to include shelter belt woodland.

4. Soil Resources

The entire site has been mapped as one unit because any variations within the soil are minor and localised.

Typically 25 to 30 cms of black (10 YR 2/1) loamy sand overlies dark brown (7.5 YR 3/2) loamy sand with orange red (5 YR 5/6) sand at depths below 40 cm.

The structure of these sandy soils is weakly developed and usually consists of loose to very friable coarse sub-angular blocky pedis to about 45 cm and single grain structures below this depth in the sand horizons. A weakly cemented, discontinuous band occurs in some profiles in the upper subsoil, especially in those soils which have a slightly stony horizon at about 30 cm. The cementing is not pronounced and rarely causes a barrier to root penetration. The soils are moderately porous to very porous in most places.

The soils usually contain only occasional stones in the topsoil and lower subsoil but in some areas the upper subsoil contains a band of small gravel which in the vicinity of pits 1 and 2 accounted for 15 to 17% of the volume of the horizon. Stones occur to the surface on top of some of the small ridges.

The soils are freely drained having no evidence of mottling, gleyed horizons or slowly permeable horizons in the profile. They fall into Wetness Class 1.

Plant roots are abundant in the topsoil but become less with depth. Worms were seen throughout the pit but were most common in the topsoil. Organic matter levels in the topsoil are high for sandy soils and typically 5.5% under grass but only 1.9% in the arable field. Soil pH varies from 5.7 to 6.6 in the topsoil and from 5.5 to 6.6 in the lower subsoil.

5. Summary

The land is classified as Sub grade 3a and 3b due to the droughty nature of the soils. Only 1 soil unit has been identified.

5.1 Summary of Soils

<u>Depth</u>	<u>Texture</u>	<u>Colour</u>	<u>Stones</u>	<u>pH</u>	<u>Organic Matter</u>
0-30 cm	Loamy sand	Black	Few	5.7-6.6	1.9-5.6
30-40 cm	Loamy sand	Dark brown	15%	5.8-6.6	0.9-2.1
40-120 cm	Sand	Orange red	Few	5.5-6.6	0.1-0.8

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