

8FCS 4821

98/92

PARSONAGE FARM, CHISELDON, SWINDON

AGRICULTURAL LAND CLASSIFICATION

Report of survey

1. INTRODUCTION

One hundred and seventy five hectares of land at Parsonage Farm, Chiseldon were graded using the Agricultural Land Classification (ALC) System in December 1992. The survey was carried out as part of the preliminary work for the Swindon Community Forest.

The fieldwork was carried out by ADAS's Resource Planning Team (Taunton Statutory Unit) at a scale of 1:10,000 (approximately one sample point every hectare). The information is correct at the scale shown but any enlargement would be misleading. This survey supercedes the 1" to the mile ALC map of this area being at a more detailed level and carried out under the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1988). A total of 151 borings and 4 soil pits were examined.

The ALC provides a framework for classifying land according to the extent to which its physical or chemical characteristics impose long-term limitations on agricultural use. The grading takes account of the top 120cm of the soil profile. A description of the grades used in the ALC System can be found in the appendix.

The distribution of ALC grades identified in the survey area is detailed below and illustrated on the accompanying map.

Table 1 Distribution of ALC grades: Parsonage Farm

Grade	Area (ha)	% of Survey Area	% of Agricultural Land
2	19.3	11.0	12.0
3A	91.7	52.3	57.2
3B	44.6	25.4	27.8
4	1.2	0.7	0.8
5	3.5	2.0	2.2
Non Agric	13.4	7.6	100% (160.3ha)
Urban	1.3	0.7	
Farm Bdgs	0.5	0.3	
TOTAL	175.5	100%	

Over half of the survey area has been classified as best and most versatile.

2. CLIMATE

The grade of the land is determined by the most limiting factor present. The overall climate is considered first because it can have an overriding influence on restricting land to lower grades despite other favourable conditions.

To assess any overall climatic limitation, estimates of important climatic variables were obtained for the site by interpolation from the 5km grid Met Office/Maff Database (Met Office/MAFF/SSLRC 1989). The parameters used for assessing climate are accumulated temperature, (a measure of the relative warmth of a locality) and average annual rainfall, (a measure of overall wetness). The results shown in Table 2 reveal that there is a climatic limitation over part of the site. Land over 173m cannot be graded better than Grade 2.

No local climatic factors such as exposure were noted in the survey area. Climatic data on Field Capacity Days (FCD) and Moisture Deficits for wheat (MDW) and potatoes (MDP) are also shown. This data is used in assessing the soil wetness and droughtiness limitations referred to in Section 5.

Table 2 Climatic Interpolations: Parsonage Farm

Grid Reference	SU 178 794	SU 182 803
Height (m)	178	130
Accumulated Temperature (° days)	1330	1384
Average Annual Rainfall (mm)	779	769
Overall Climatic Grade	2	2
Field Capacity (Days)	172	168
Moisture Deficit, Wheat (mm)	87	95
Potatoes (mm)	74	84

3. RELIEF

The southern part of the site is a gently undulating plateau which drops away to the north with some steep coombs. The maximum altitude is 175m and the site is lowest by the M4 motorway.

4. GEOLOGY AND SOILS

The southern part of the survey area is underlain by Cretaceous Lower chalk. The higher land in the north and the steep slopes above the sewage works is underlain by Cretaceous Upper Greensand. The remaining areas have Cretaceous Galt as shown on the British Geological Survey sheet 266 (1:50,000).

The soils across the site are variable reflecting the geology. The soils over the chalk are generally free draining but shallow. The soils over the Greensands are

deeper. The soils over the Galt are heavy and poorly drained.

5. AGRICULTURAL LAND CLASSIFICATION

The distribution of ALC grades identified in the survey area is detailed in Section 1 and shown on the accompanying ALC map. The information is correct at the scale shown but any enlargement would be misleading.

Grade 2

Four areas of Grade 2 have been identified in the Survey area. The two northern areas overlie the Greensand and are free draining. However the topsoil texture is a heavy silty clay loam so the soils cannot be graded any higher in this locality because of the Field Capacity Day level. A soil pit was dug in this area. Some of the soils here have a lighter topsoil texture. The other areas of Grade 2 overlie the Chalk. Here the chalk appears in the profile deep enough for a droughtiness limitation not to exceed the workability limitation imposed by the FCD and heavy silty clay loam topsoil

Subgrade 3a

All the areas of Subgrade 3a which overlie the Chalk are limited by available water to the crops. The chalk is found at variable depths in the profile but often as shallow as 25cm. The percentage of chalk below this is not over 70% at first but around 55-65%. At depth the percentage rises over 70%. Roots were observed in profile pits as deep as 70cm. It is generally assumed that roots penetrate little below 70cm in a chalky profile and so the available water is only calculated to this depth. Roots below this depth can only make a minimal contribution to the available water. The topsoils in these profiles are heavy silty clay loams. The subsoils become clays when the stone content rises. These soils are free draining and can be assigned to Wetness Class I.

The remaining areas of Subgrade 3a show evidence of restricted drainage. These soils are assigned to Wetness Class II and can be graded no higher than 3a with heavy silty clay loam topsoils. Some of these soils are stoney.

Subgrade 3b

The areas of 3b overlying Chalk have restricted drainage. The soils are gleyed and have slowly permeable layers at depth. The chalk is sometimes found deep in the profile. The topsoils are heavy silty clay loams. The soils are assigned to Wetness Class III.

The remaining areas of 3b have heavier soils and are generally more poorly drained. These soils also have heavy

silty clay loam topsoils which get heavier in the subsoils. There is evidence of gleying near the surface and slowly permeable layers are found higher in the profile than in the other 3b areas. The SPL was confirmed in a soil pit. These soils must therefore be assigned to Wetness Class IV.

Grades 4 and 5

The coombs cut into the chalk plateau have steep sides and these are down graded to Grade 4 and 5 on the basis of the limiting slope which restricts the versatility of the land. The Grade 5 land is only suitable for grazing.

APPENDIX

DESCRIPTION OF THE GRADES AND SUB-GRADES

Grade 1 - excellent quality agricultural land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly include top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2 - very good quality agricultural land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural and horticultural crops can usually be grown but on some land in the grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1.

Grade 3 - good to moderate quality agricultural land

Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.

Subgrade 3a - good quality agricultural land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b - moderate quality agricultural land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass or lower yields of a wider range of crops or high yields of grass which can be grazed or harvested over most of the year.

Grade 4 - poor quality agricultural land

Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (eg cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5 - very poor quality agricultural land

Land with very severe limitations which restrict use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

Descriptions of other land categories used on ALC maps

Urban

Built-up or 'hard' uses with relatively little potential for a return to agriculture including: housing, industry, commerce, education, transport, religious buildings, cemeteries. Also, hard-surfaced sports facilities, permanent caravan sites and vacant land; all types of derelict land, including mineral workings which are only likely to be reclaimed using derelict land grants.

Non-agricultural

'Soft' uses where most of the land could be returned relatively easily to agriculture, including: private parkland, public open spaces, sports fields, allotments and soft-surfaced areas on airports/airfields. Also active mineral workings and refuse tips where restoration conditions to 'soft' after-uses may apply.

Agricultural buildings

Includes the normal range of agricultural buildings as well as other relatively permanent structures such as glasshouses. Temporary structures (eg polythene tunnels erected for lambing) may be ignored.

Open water

Includes lakes, ponds and rivers as map scale permits.

Land not surveyed

Agricultural land which has not been surveyed.

Where the land use includes more than one of the above land cover types, eg buildings in large grounds, and where map scale permits, the cover types may be shown separately. Otherwise, the most extensive cover type will usually be shown.