

WINCHCOMBE
AGRICULTURAL LAND CLASSIFICATION
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AGRICULTURAL LAND CLASSIFICATION SURVEY

CONTENTS

	Page
INTRODUCTION	1
SUMMARY	1
CLIMATE	1
RELIEF	2
GEOLOGY AND SOILS	2
AGRICULTURAL LAND CLASSIFICATION AND MAP	
REFERENCES	4
APPENDIX I Description of the Grades and Sub-grades	5
APPENDIX II Definition of Soil Wetness Classes	7
APPENDIX III Survey Data	
Sample Point Location Map	
Pit Descriptions	
Boring Profile Data	
Boring Horizon Data	
Abbreviations and Terms used in Survey Data	8

WINCHCOMBE

AGRICULTURAL LAND CLASSIFICATION SURVEY

INTRODUCTION

- 1 This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of 9.5ha of land to the north of Winchcombe. Field survey was based on 9 auger borings and 1 soil profile pit and was completed in February 1999.
- 2 The survey was conducted by the Resource Planning Team of FRCA Western Region on behalf of MAFF in its statutory role in the preparation of Tewkesbury Local Plan.
- 3 The published regional ALC map (MAFF 1977) shows the site at a reconnaissance scale as Grade 3. The site had not been previously surveyed and the current survey uses the Revised Guidelines and Criteria for grading the quality of agricultural land (MAFF 1988). Grade descriptions are summarised in Appendix I.
- 4 At the time of survey land cover was arable and permanent grassland. Other land which was not surveyed included an area that had been planted with trees and was overgrown with scrub.

SUMMARY

- 5 The distribution of ALC grades is shown on the accompanying 1:10,000 scale ALC map. The detail of information shown at this scale is appropriate to the intensity of field survey but could be misleading if enlarged or applied to small areas. Areas are summarised in the Table 1.

Table 1 **Distribution of ALC grades - Winchcombe**

Grade	Area (ha)	/ Surveyed Area (84ha)
3b	8.4	100
Other land	1.1	
Total site area	9.5	

- 6 The whole of the site was classified as Subgrade 3b; these soils generally have a moderate wetness limitation.

CLIMATE

- 7 Estimates of climatic variables for this site were derived from the published agricultural climate dataset 'Climatological Data for Agricultural Land Classification' (Meteorological Office 1989) using standard interpolation procedures. Data for key points around the site are given in Table 2 below.
- 8 Since the ALC grade of land is determined by the most limiting factor present, overall climate is considered first because it can have an overriding influence by restricting

land to a lower grade despite more favourable site and soil conditions. Parameters used for assessing overall climate are accumulated temperature a measure of relative warmth and average annual rainfall a measure of overall wetness. The results shown in Table 2 indicate that there is no overall climatic limitation.

- 9 Climatic variables also affect ALC grade through interactions with soil conditions. The most important interactive variables are Field Capacity Days (FCD) which are used in assessing soil wetness and potential Moisture Deficits calculated for wheat and potatoes which are compared with the moisture available in each profile in assessing soil droughtiness limitations. These are described in later sections.

Table 2 Climatic Interpolations Winchcombe

Grid Reference	SP 022 295	SP 028 290
Altitude (m)	105	80
Accumulated Temperature (day °C)	1595	1425
Average Annual Rainfall (mm)	748	744
Overall Climatic Grade	1	1
Field Capacity Days	168	168
Moisture deficit (mm)		
Wheat	98	100
Potatoes	87	90

RELIEF

- 10 Altitude ranges from 80 metres close to the River Isbourne at the east of the site to 100 metres at the west of the site. The site is gently sloping and this does not affect the grading of the agricultural land.

GEOLOGY AND SOILS

- 11 The underlying geology of the site is shown on the published geology map (BGS 1981) as lower lias clay. The ALC survey found clay over the whole of the site which corresponds to the information on the published geology maps.
- 12 Soils were mapped by the Soil Survey of England and Wales at a reconnaissance scale of 1:250,000 (SSEW 1985) as Denchworth. More detailed soils information is also available in the 1:50,000 scale survey of Worcester and the Malverns area (SSEW 1986).
- 13 The 1:50,000 scale SSEW survey identified 3 soil associations over the site. These were Badsey found over the majority of the eastern site, Wickham found over the central and eastern part of the west site and adjacent to the River Isbourne on the eastern site, and Drayton soils along the western part of the western site running parallel with the road. Both the Badsey and Wickham soils were described as clay loam topsoils the former onto loamy sand or sandy loam to depth the latter onto clay to depth. The Drayton series were described as clay topsoil onto clay to depth.

- 14 The ALC survey found the soils to be heavy clay loam over clay to depth which corresponds directly to the published soils information

AGRICULTURAL LAND CLASSIFICATION

- 15 The distribution of ALC grades found by the current survey is shown on the accompanying 1:10 000 scale map and areas are summarised in Table 1. The detail of information shown at this scale is appropriate to the intensity of field survey but could be misleading if enlarged or applied to small areas

16 **Subgrade 3b**

The whole site was found to be of moderate quality. The soils were described as having heavy clay loam over calcareous clay to depth. A soil profile pit confirmed that the clay was slowly permeable and this places them into Wetness Class III or IV (see Appendix II) depending upon the depth at which the clay is found within the profile.

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1 250 000 scale SSEW Harpenden

SOIL SURVEY OF ENGLAND AND WALES (1984) Soils and Their Use in South West
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SOIL SURVEY OF ENGLAND AND WALES 1986 Sheet 150 Worcester and the Malvern
district 1 50 000 scale SSEW Harpenden

DESCRIPTION OF GRADES AND SUBGRADES

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 most 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

Source MAFF (1988) Agricultural Land Classification of England and Wales Revised Guidelines and Criteria for Grading the Quality of Agricultural Land MAFF Publications Alnwick

DEFINITION OF SOIL WETNESS CLASSES

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile

Wetness Class I

The soil profile is not wet within 70 cm depth for more than 30 days in most years

Wetness Class II

The soil profile is wet within 70 cm depth for > 1 90 days in most years or if there is no slowly permeable layer within 80 cm depth it is wet within 70 cm for more than 90 days but not wet within 40 cm depth for more than > 0 days in most years

Wetness Class III

The soil profile is wet within 70 cm depth for 91 180 days in most years or if there is no slowly permeable layer within 80 cm depth it is wet within 70 cm for more than 180 days but only wet within 40 cm depth for between > 1 and 90 days in most years

Wetness Class IV

The soil profile is wet within 70 cm depth for more than 180 days but not within 40 cm depth for more than 210 days in most years or if there is no slowly permeable layer within 80 cm depth it is wet within 40 cm depth for 91 210 days in most years

Wetness Class V

The soil profile is wet within 40 cm depth for 211 >> 5 days in most years

Wetness Class VI

The soil profile is wet within 40 cm depth for more than >> 5 days in most years

Notes The number of days specified is not necessarily a continuous period

In most years is defined as more than 10 out of 20 years

Source Hodgson J M (Ed) (1997) Soil Survey Field Handbook Soil Survey Technical Monograph No 5 Silsoe

SITE NAME		PROFILE NO	SLOPE AND ASPECT	LAND USE	Av Rainfall	748 mm	PARENT MATERIAL	
WINCHCOMBE		PIT 1 ASP (3-6)	2 S	OILSEED RAPE	ATO	1401 day C	LOWER LIAS CLAY	
JOB NO		DATE	GRID REFERENCE	DESCRIBED BY	FC Days	168	PSD SAMPLES TAKEN	
711)		10/2/99	SP 024 295	SH/SK	Climatic Grade	1		
					Exposure Grade			

Horizon No	Lowest Av Depth (cm)	Texture	Matrix (Ped Face) Colours	Stoniness Size Type and Field Method	Mottling Abundance Contrast Size and Colour	Mangan Concs	Structure Ped Development Size and Shape	Consistence	Structural Condition	Pores (Fissures)	Roots Abundance and Size	Calcium Carbonate Content	Horizon Boundary Distinctness and form
1	23	HCL	2>Y4/2 4/3	3 HR(V)	None	None					CF+VF	Y	Smooth abrupt
2	41	HCL	2>Y5/3 4/3 (2>Y4/2 5/2)	0 0	FFF 10YR5/6	None	WKCSAB	FM	P	M	FF+VF	Y	Smooth clear
	60	C	2>Y5/3 (2>YR5/2 6/2)	0	CFD 10YR5/6	Few	WKM+CAB	FM	P	P	FF+VF	Y	Smooth clear
4	70+	C	2>Y5/2 5/5 (2>Y5/2)	0	CFD 10YR5/6	Few	MASS	FM	P	P	FVF	Y	

Profile Depth from	41cm	Available Water	Wheat	88mm	Final ALC Grade 3b Main Limiting Factor(s) We Remarks H3 Weakly developed structure soil is adherent and rips rather than pulling away at peds although within soil there are well defined M+C AB blocks not soil structure but lias/mudstone structure
Slow Permeable Horizon From	41cm		Potatoes	100mm	
Waters Class	IV	Moisture Deficit	Wheat	98mm	
			Potatoes	88mm	
Waters Grade	3b	Moisture Balance	Wheat	10mm	
			Potatoes	+12mm	
		Droughtiness Grade	3a	(Calculated to 70cm)	