1512-90-92

AGRICULTURAL LAND CLASSIFICATION
ANDOVER DOWN FARM
ANDOVER

AGRICULTURAL LAND CLASSIFICATION

ANDOVER DOWN FARM, ANDOVER, HAMPSHIRE

1 INTRODUCTION

1 1 In September 1992 an Agricultural Land Classification (ALC) survey was carried out on approximately 39 ha of land at Andover Down Farm to the east of Andover Hampshire ADAS was commissioned by MAFF to determine the quality of land affected by proposals for a change of land use to a golf course

1 2 The survey work was carried out at a detailed level of approximately one boring per hectare A total of 36 borings and two soil inspection pits were described using MAFF's revised guidelines and criteria for grading the quality of agricultural land (MAFF 1988) These guidelines provide a framework for classifying land according to the extent to which its physical or chemical characteristics impose long term limitations on its agricultural use

At the time of survey the land had been set-aside

1 3 The distribution of the grades and sub-grades is shown on the attached ALC map and the areas are given in the table below The map has been drawn at a scale of 1 10,000 It is accurate at this scale but any enlargement may be misleading

Distribution of Grades and Subgrades

		Area (ha)	% total agricultural land
Grade	2	7 10	20
	3a	25 43	74
	3b	2 16	6
Total agricultural area		34 69	100
Urban		2 96	
Woodland		2 11	
Total area of site		39 76	

1 4 Appendix 1 gives a general description of the grades and land use categories identified in this survey

1 5 The majority of the site has been mapped as grades 2 and 3a with a small area of 3b

Most of the land comprises shallow soil profiles over chalk although deeper clayey profiles were found to occur across the higher land towards the north of the site The shallow chalk soils are limited to sub-grade 3a by droughtiness, whilst the deeper profiles are limited to the same grade by workability as a result of heavy topsoil textures

Across the southern part of the site, profiles tend to be deep, clayey and moderately stony and land has been graded as 2 on the basis of slight droughtiness and workability limitations Two small units of sub-grade 3b have been mapped These represent areas of relatively steep gradients (ie, 8°-10°) on the sides of a valley running north-west to south-east through the site Soil depth over chalk is also very limited at these localities and the land is likely to suffer severe droughtiness problems

2 PHYSICAL FACTORS AFFECTING LAND QUALITY

Relief

2 1 The site lies at an altitude of approximately 100-121 m A O D Land is at its highest towards the north of the site falling towards the east and south-east Two small valleys running north-west to south-east occur towards the eastern site boundary and gradients on the sides of one of the valleys exceed 7° Slopes of 8-10° were measured using an optical reading clinometer and the land is limited to sub-grade 3b accordingly

Climate

2 2 Estimates of climatic variables were obtained by interpolation from a 5 km grid dataset (Met Office, 1989) for a representative location in the survey area

Climatic Interpolation

Grid Reference	SU 402 468
Altitude, (m, A O D)	100 120
Accumulated Temperature (° days, Jan-June)	1428 1405
Average Annual Rainfall (mm)	764 772
Field Capacity Days	167 168
Moisture Deficit, wheat (mm)	105 102
Moisture Deficit, potatoes (mm)	96 93

2 3 There is no overall climatic limitation at this locality although it should be noted that both average annual rainfall and field capacity days are relatively high in a regional context The moisture deficits for wheat and potatoes are correspondingly relatively low These factors will interact with soil factors to influence soil wetness and droughtiness limitations

Geology and Soils

2 4 British Geological Survey, Sheet 283, Andover (1975) shows the entire site to be underlain by Cretaceous Upper Chalk

2 5 Soil Survey of England and Wales, Sheet 6, Soils of South-East England (1983) shows the site to comprise mainly soils of the Andover 1 association These are described as 'variably flinty and chalky silty brown rendzinas over chalk' (SSEW 1984) Sheet 6 also indicates the possibility of an area of the Carstens association across the south-eastern part of the site These soils are described as, 'fine silty over clayey typical palaeo - argillic brown earths , (SSEW, 1984)

2 6 Detailed field examination of the soils on the site broadly confirms the presence of two main soil types

Relatively shallow soils over chalk occur across the northern half of the site, although deeper chalk drift soils can be found in the valley bottoms and deep clay-with-flints soils cap the highest land across

3 AGRICULTURAL LAND CLASSIFICATION

3 1 The ALC grading of the survey area is primarily determined by interactions between soil and climatic factors giving rise to soil workability and droughtiness limitations In addition, two small areas of the site have been graded on the basis of steep slopes acting as a limitation to the land quality ALC grades 2, 3a and 3b have been mapped

3 2 Grade 2

Land of this quality has been mapped primarily across the southernmost part of the site where relatively deep, well drained soils were found to occur A small area of similar soils was observed in the valley bottom at the north-east of the site Profiles typically comprise heavy clay loam or heavy silty clay loam topsoils which are slightly stony (having between 3 and 8% flints <2 cm) These rest over similar textures or reddish brown clay in the subsoil whose stoniness tends to increase with depth up to about 25% v/v small flints in the lower subsoil Profiles are well drained wetness class I, but the combination of heavy topsoil textures and relatively high field capacity days results in the land being assigned to a maximum of grade 2 due to slight workability restrictions The soils may also be subject to slight droughtiness caused by slight to moderate profile stoniness

3 3 Grade 3a

The majority of the site has been assigned to this grade, the land principally being limited by workability and/or droughtiness, although it comprises two different soil types

On the upper slopes across Tinker s Hill, deep, well drained clay-with-flints soils were found to occur Profiles comprise calcareous heavy silty clay loam or more usually clay topsoils which pass to similarly textured reddish brown well drained subsoils These may overlie soft rubbly chalk from about 60-70 cm These soils are principally limited to sub-grade 3a by the combination of heavy topsoil textures and a high number of field capacity days giving rise to workability problems Less significantly they may also be prone to slight droughtiness

The remaining grade 3a land comprises similar, but shallower soils over chalk Consequently, land is limited by workability and droughtiness heavy topsoil textures of clay giving rise to workability restrictions and shallow soil depth over chalk resulting in moderate drought risk as a result of reduced reserves of available water

3 4 Grade 3b

Land of this quality has been mapped on the sides of a small valley running north-west to south-east through the site Gradients of 8°-10° were recorded using an optical reading clinometer, thereby causing the land to be assigned to sub-grade 3b On slopes of this order, the safe and efficient use of farm machinery may be compromised In addition there is a risk of soil erosion particularly if the land is left fallow

Soil depth is limited on these valley sides and land is likely to be prone to severe drought risk

September 1992
ADAS Ref 1512/90/92

RESOURCE PLANNING TEAM
Guildford Statutory Centre
ADAS Reading

SOURCES OF REFERENCE

- British Geological Survey (1975) Sheet 283, Andover

- MAFF (1988) Agricultural Land Classification of England and Wales Revised guidelines and criteria for grading the quality of agricultural land

- Meteorological Office (1989) Agroclimatic datasets for Agricultural Land Classification

- Soil Survey of England and Wales (1983) Sheet 6, Soils of South-East England

- Soil Survey of England and Wales (1984) Bulletin 15, Soils and their use in South-East England

APPENDIX 1
DESCRIPTION OF THE GRADES AND SUBGRADES

The ALC grades and subgrades are described below in terms of the types of limitation which can occur typical cropping range and the expected level and consistency of yield In practice the grades are defined by reference to physical characteristics and the grading guidance and cut offs for limitation factors in Section 3 enable land to be ranked in accordance with these general descriptions The most productive and flexible land falls into Grades 1 and 2 and Subgrade 3a and collectively comprises about one third of the agricultural land in England and Wales About half the land is of moderate quality in Subgrade 3b or poor quality in Grade 4 Although less significant on a national scale such land can be locally valuable to agriculture and the rural economy where poorer farmland predominates The remainder is very poor quality land in Grade 5 which mostly occurs in the uplands

Descriptions are also given of other land categories which may be used on ALC maps

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 includes 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

Woodland

Includes commercial and non commercial woodland A distinction may be made as necessary between farm and non farm woodland

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