15/89

Report of the MAFF Agricultural Land Classification Survey (1989) - Wasperton.

1. **Summary:**

The land has been classified following the Agricultural Land Classification of England and Wales - revised guidelines and criteria for grading the quality of agricultural land (MAFF, 1988). At the land surveyed, 17.9 ha is classified sub-grade 3b.

2. **Climatic Limitations:**

The main parameters used in the assessment of the climatic limitations are average annual rainfall (AAR), as a measure of overall wetness and accumulated temperature (ATO), as a measure of the relative warmth of the locality. The figures of AAR and ATO indicate that there are no climatic limitations on this site.

3. **Site Limitations:**

The assessment of site factors is primarily concerned at the way in which topography influences the use of agricultural machinery and hence the cropping potential of the land. There are no site limitations affecting the use of the land.

4. **Soil Limitations:**

The main soil properties which affect the cropping potential and management requirements of land are texture, structure, depth, stoniness and chemical fertility. These may act as limitations separately, in combination or through interactions with climate or site factors. The physical limitations which result from interactions between climate, site and soil wetness, droughtiness and erosion.

To achieve full yield potential a crop requires an adequate supply of soil moisture through the season. Droughtiness is most likely to be a significant limitation to crop growth in the areas with relatively low rainfall or high evapro-transpiration or where the soil holds only small reserves of moisture available to plant roots. The severity of the limitation in an area depends on the relationship between the soil properties and climatic factors and the moisture requirements of the crops grown. These relationships are complex and the degree of moisture stress varies from year to year according to the weather. In the ALC system the method used to assess the droughtiness provides an indication of the average droughtiness based on two references crops, winter wheat and main crop potatoes. The method used to assess droughtiness takes account of crop rooting and foliar characteristics to obtain an estimate of the average soil moisture balance (MB) for the reference crops at a given location. The moisture balance is calculated on the basis of two parameters - the crop adjusted available water capacity of the soil profile and the moisture deficit. Reference will be made to droughtiness where it is a limiting factor in Section 6.

5. **Background Information:**

The underlying geology (before sand and gravel extraction) is mapped as River Terrace deposits (Sheet 201, Banbury, Geological Survey).

6. **Agricultural Land Use:**

At the time of the survey, April 1989, Area 1 was under winter cereal and Area 2 under grass.

7. **Agricultural Land Quality (Appendix 1):**

Both areas surveyed have been classified as sub-grade 3b. The soil typically has a sandy loam texture to at least 60 cms. In places in areas 1 and 2 profiles occasionally have a sandy clay loam horizon present below 30 cms and occasionally pockets of clay mixed with the sand.

Over both areas the presence of a stony layer prevented augering to depths of below 60 cms and in places often stopped the auger at 30 cms. The top soil stone content was measured as being approximately 12%, with small and medium sized rounded hard stones. In the upper sub-soil (35-50 cms) the stone content was in the range of 18 to 25% and below this depth the stone content increased posing problems during pit digging using a spade and pickaxe. The stone content of the soil becomes a limiting factor to the agricultural use of the land through its effect on the available water holding capacity of the soil. The stone content and stone type are two factors taken into account when calculating the available water holding capacity of the soil. The resultant moisture balance from the soils indicate a classification of sub-grade 3b.

The main limitations to the agricultural use of this land is the risk of droughtiness.

Resource Planning Group
May 1989

Agricultural Land Classification Summary

Grade sub/grade	ha	as % of total	as % of agricultural land
3b	17.9	100	
TOTAL	17.9		

APPENDIX I

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 of 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: golf courses, 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.

RDM/SF

MINERAL SITE RECORD: 25.4.89

SOIL PIT DETAILS

Site Name: **WASPERTON Area 1.**

Pit Number: 1

Land use: **Cereal**

Slope:

Aspect:

Depth	Texture	Munsell Colour	Mottles Abundance/ Colour	Structure Grade/Class/Type	Porosity	Stone Abundance/Type	Plant Roots	Comments
0-35	SL	5 YR 3/3		weakly developed coarse subangular blocky	>0.5%	2 - < 6 cm **10%** Friable.		Much ploughed in organic matter.
35 plus 55	SL	5 YR 4/6		Fine granular very friable **good**		Very Friable Very stony good structure **(20%)**		
55-60+ Augered below 55 cm	sand and gravel mix.			**Moderate structure**		Moderate structure Stone content below 50 **23%**		

Profile Details:

Plant Roots: Plant roots abundant top 40 cms, fewer below 40 cms.

Soil Fauna: some present to at least 60-

General Comments:

Below 50

13% 2 - 6 cm

< 1 cm c. 12%

= **23%**

Stone below 30.

Upper subsoil stone content **20%**

RDM/SF

26.4.89

MINERAL SITE RECORD

SOIL PIT DETAILS

Site Name: **WASPERTON**

Area 1

Pit Number: 2

Land use: **Cereal**

Slope:

Aspect:

	Depth	Texture	Munsell Colour	Mottles Abundance/ Colour	Structure Grade/Class/Type	Porosity	Stone Abundance/Type	Plant Roots	Comments
2/1	0-30	SL (Moist)	5 YR 4/3		Weakly developed fine/medium subangular blocky		2-6 cm - 12% None >6 cm **12%**		
2/2	30-50	LS (some clay present)	5 YR 4/6		Weakly developed fine subangular blocky and granular.		Subsoil **<5%** - 2 cm		
2/3	50 - 60	SCL Moist	"	No gleying/ mottling.	Moderately de- veloped, moist, subangular, blocky, firm structure. **Moderate.**	c. 0.5%	No stone, / Compacted?		

Profile Details:

Plant Roots - common in top 40 cm, fewer with depth

Soil Fauna:

General Comments:

RDM/SF

MINERAL SITE RECORD

SOIL PIT DETAILS

Site Name: **WASPERTON**

Pit Number: 3

Slope:

Land use: **Cereal**

Aspect:

Area 1

	Depth	Texture	Munsell Colour	Mottles Abundance/ Colour	Structure Grade/Class/Type	Porosity	Stone Abundance/Type	Plant Roots	Comments
3/1	0-30	**SL**	5 **YR 3/4**		Weakly developed fine Subangular blocky		12% 2-6 cm		
3/2	30-60	**SL**	5 YR 3/4		Weakly developed granular and fine sub- good structure	very friable	Upper Subsoil 72 cm = 13% 1-2 cm = 12% 25%		
	60+	Sand and gravel mix Difficult to penetrate.	Difficult to dig through. 50% stone.		Moderate structure.		50%		

Profile Details:

Plant Roots In top 30 cm, level by 40 cm. Earthworm activity in top 25 cm.

Soil Fauna:

General Comments:

RDM/SF

MINERAL SITE RECORD

Site Name: **WASPERTON**

Area 2

SOIL PIT DETAILS

Pit Number: 1

Land use: **Grass**

Slope:

Aspect:

Depth	Texture	Munsell Colour	Mottles Abundance/ Colour	Structure Grade/Class/Type	Porosity	Stone Abundance/Type	Plant Roots	Comments
0-30	SL	10 Y R 4/3				Topsoil - 12%		
30-55	SL	7.5 YR 4/4		Weakly developed fine subangular blocky/granular very friable. **Good.**	< 0.5%	Upper subsoil 14% + smaller stones **17%**		
55+	SL/SCL Stony pockets of clay	7.5 YR 4/2	grey no distinct mottling.	Moderate		50 %		Very stony 60 plus difficult to dig.

3/1

Profile Details:

Plant Roots

Soil Fauna:

General Comments:

pl

SOIL NOTES FOR WASPERTON 25 APRIL 1989

1. 0-45cm of brown sandy loam, moist throughout, ploughed in straw, level. Cereals.

2. 0-30cm of brown sandy loam, with ploughed in straw, 30-45cm brown sandy loam with small pebbles, 45-50cm of pink brown fairly coarse sandy loam /sandy clay loam with small pebbles. Difficult to auger below 50cm. Level, Cereals.

3. 0-25cm of brown sandy loam, 25-30cm of orange brown sand, 30-55cm of orange brown sand with occasional pockets of clay, 55-60cm of brown sandy loam. Difficult to auger below 60cm because of stones. Level. Cereals.

4. 0-30cm of brown sandy loam. Stones stopped auger. Nearby 0-40cm of brown sandy loam, 40-60cm pink brown sand with clay pockets, moist throughout. Stony.

5. 0-30cm of brown sandy loam. Stony and difficult to auger below 30cm. Nearby auger stopped again at 30cm.

6. 0-30cm of brown . 7.5 YR 4/4 sandy loam, 30-40cm of brown sandy loam. Very dry and difficult to auger. Compact horizons. Some some faint mottling at 25cm.

7. 0-43cm of brown sandy loam, 43-45cm of pink brown sandy clay. Stony and difficult to auger below 30cm. Stones stopped auger at 45cm Level, cereals.

8. 0-50cm of sandy loam, 7.5 YR 4/2 , occasional small pebbles throughout 50-60cm pink brown coarse sandy loam, 5 YR 4/6 , 60-65 cm of pink brown sand with pockets of clay. Difficult to auger below 65cm, stones.

9. 0-40cm of brown sandy loam/sandy clay loam, 40-60cm of pink brown loamy sand, difficult to auger below 60cm. Occasional pebbles throughout.

AREA 2
Level, grass.

1. 0-15cm of sandy loam, 5 YR 3/4, dark reddish brown, 15-30cm of sandy loam/sandy clay loam, with numerous small pebbles present, 30-55cm of brown sandy loam with fewer stones, 55-60cm of clay, 5 YR 4/3. difficult to auger below 60cm. Stony layer between 15-30cm.

2. 0-30cm of brown sandy loam, 30-45cm of brown sandy loam/sandy clay loam. 7.5 YR 4/2. 45-50cm of brown sandy clay loam/sandy loam. Stony and difficult to auger below this depth. Moist.

3. 0-30cm of brown sandy loam, difficult to auger below 30cm because of stone 7.5 YR 4/4. 30-35cm of brown sandy clay loam, auger stopped by stones.

4. 0-28cm of brown sandy loam, stones at 28cm, difficult to auger.

5. 0-30cm of brown sandy loam, 30-40cm of sandy loam, 5 YR 4/3. Difficult to auger because of stone, slightly grey colours and moist at 40cm.

6. 0-30cm of brown sandy loam, 30-45cm of brown sandy loam, moist, 45-55cm of brown sandy loam. No glane. Difficult to auger below 55cm because of stone.

7. 0-15cm of brown sandy loam, fairly coarse, 15-45cm of brown sandy loam, midst colours and small stones present, 45-50cm of lighter brown sandy loam. Stony and difficult to auger below 50cm.

8. 0-35cm of brown sandy loam, 33-45cm of brown heavy clay loam, 7.5 YR 5/6, 45-60cm of brown sandy clay loam. Difficult to auger below 60cm because of stone.

9. 0-30cm of brown sandy loam, difficult to auger below this depth because of stone.

10. 0-30cm of brown sandy loam, difficult to auger below 30cm because of stone. Nearby clay present in the top 15cm.

11. 0-30cm of brown sandy loam, moist. Difficult to auger below 30cm because of stone. More recently restored area.

12. 0-30cm brown sandy loam, slightly moist at 30cm, 30-40cm ditto, difficult to auger below 40cm because of stone.