Decision-making in land use planning and the Agricultural Land Classification system: stick, twist or bust?

An report for CPRE by Ellie Brodie, Grounded Insight
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Summary

- There are many competing ambitions for England's land. A Land Use Framework should help identify areas where land should be prioritised for carbon sequestration, nature recovery, and agricultural production.
- Good quality data is needed to identify and help decision making about the most efficient use of the most productive agricultural land. Currently, the Agricultural Land Classification (ALC) system is used to assess the inherent capability of land to support food production.
- A version of the ALC has been in use in land use planning since the 1940s. The current system has been in operation since 1988.
- There are six Grades in the ALC. The top three grades (1, 2 and 3a) are the nation's Best and Most Versatile (BMV) land, recognised by the National Planning Policy Framework (England). Grades 3b, 4 and 5 are more constrained in their capability to produce food.
- There are several serious issues with the ALC system and with its application both currently and looking ahead, including:
    - the use of old climate data for ALC grading. Using more up-to-date data drastically reduces the amount of predicted BMV land, the nation's best land for food production
    - the impact of intensive farming practices degrading prime agricultural land in lowland peatlands and potentially impacting on its ALC grading
    - ALC survey data use in planning decisions, which has allowed over 14,000ha of BMV land to be lost to development
    - legacy system issues relating to the age of the ALC system and its evolution over time, creating conditions for it to be misinterpreted and misused by decision-makers.
- These issues raise questions about the accuracy and reliability of the ALC system and whether it is an appropriate tool in land use research and decision-making.
- Based on our analysis of the issues, including conversations with a range of experts in interviews and a roundtable, we make four recommendations to policymakers:

  1: Conduct a review and update of the ALC system, including implementing ADAS' 2022 recommendations to, at a minimum, update the ALC's climate dataset.[1]

  2: Re-survey lowland peatlands

  3: Better protect BMV land in the planning system

4: Use an updated ALC system as one tool in the Land Use Framework

Introduction

Net zero by 2050. By 2029, 1.5 million new homes. By 2030, 30% of biodiversity protected. Three quarters of our rivers, streams and lakes in good health by 2027. Clean power by 2030. Levels of self-sufficiency in food production maintained. The international and domestic goals and targets go on. Various policy levers exist to deliver the ambitions, from the National Planning Policy Framework and Biodiversity Net Gain (BNG) to Local Nature Recovery Strategies, Environmental Land Management (ELM) schemes, the Environmental Improvement Plan and the forthcoming Strategic Energy Plan.

There are so many competing ambitions for our land that to meet climate and nature targets alone, an area the size of Northern Ireland could be needed[2] and up to 8% of English land released from agriculture by 2035.[3] Yet there is no strategy or credible plan to align these sector-specific goals into one coherent whole. Even within sectors including agriculture, there is a lack of credible strategies for reducing emissions.[4] There are no tools for integrated decision-making, no guide as to how to get there.

Some land in England has a disproportionate number of competing demands on it, from producing food and renewable energy to locking in carbon and building housing. Often, the same land is under intensifying threat from the changing climate. These considerations lead us towards the need for a Land Use Framework to ensure all the competing demands on land maximise synergies and minimise trade-offs. Calls for a Land Use Framework have gathered momentum and evidence[5,6,7] and a consultation on one is expected in early 2025.

A Land Use Framework should help better identify and define areas where land should be optimised for priority uses other than housing such as prime agricultural land or land which is essential for carbon sequestration and nature recovery.[8] Good quality data is needed to identify and help decision making about the most efficient use of the most productive agricultural land – in the short and medium term, and into the future in a changed climate.

There is one system in use in England and Wales for determining the physical quality of land and its inherent capability to support food production at national, regional and local levels: the Agricultural Land Classification (ALC) system. This briefing aims to inform the debate in England by asking if this system, and the data and mapping the system generates, should be kept as it is, needs adapting or should be scrapped.

CPRE are querying the ALC system and its future use for several reasons. First, the pressures on certain areas of land and competition for potential uses are becoming even more intense, including through the impact of climate change, so understanding the current and future potential of the land for food production is critical. Second, the current protection of high-quality land for food production is inadequate.[9] Third, data gathered under, and maps created through, the ALC system is used in scientific research and in decision-making. It is the established method for assessing the land's inherent capability to support food production, and as such could be included in a Land Use Framework. Our briefing aims to shed light on this topic to better aid decision-making around the use of the ALC system in future.

The Agricultural Land Classification System

The method or system for assessing the location of high-quality agricultural land is the Agricultural Land Classification (ALC). It is an approach to assessment of the extent to which the physical or chemical characteristics of land impose long-term limitations on agricultural use: it is not a map nor a collection of maps; nor is it data.

A version of the ALC has been in use in land use planning since the 1940s. The system used today is largely based on the one introduced in 1966, though was updated in 1988 and is the only approved system for grading the quality of agricultural land in England and Wales today.[10] Box 2 provides an overview of the history and development of the ALC.

The ALC is concerned with the inherent potential of land under a range of farming systems. The current agricultural use, or intensity of use, does not affect the ALC grade. The ALC gives a high grading to land which allows more flexibility in the range of crops that can be grown - its 'versatility' - and which requires lower inputs but also takes into account ability to produce consistently high yields of a narrower range of crops. The physical limitations of land have four main effects on the way land is farmed: the range of crops which can be grown; the level of yield; the consistency of yield; and the cost of obtaining the crop.

The ALC system interprets information about the limitations posed by the soil, site and climate to place land in one of six grades from 1 to 5 (with 3 subdivided into 3a and 3b). Box 1 summarises the ALC's three components.

Box 1: Summary of the three main components of the ALC

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.

Site limitations: The assessment of site factors is primarily concerned with the way in which topography influences the use of agricultural machinery and hence the cropping potential of the land.

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 are soil wetness, droughtiness, and erosion. Wetness and droughtiness influence the choice of crops grown and the level and consistency of yields, as well as use of land for grazing livestock.

The top three grades (1, 2 and 3a) are the nation's Best and Most Versatile (BMV) land, recognised by the National Planning Policy Framework (England).[11] Where significant development of agricultural land is necessary, local planning authorities (LPAs) are required, where possible, to focus development of agricultural land on areas of poorer quality in order to retain grades 1 to 3a for agricultural production.[12]

It isn't possible to give a completely accurate picture of the amounts of land in each ALC grade, as there has been limited detailed surveying of BMV land. Estimates can be found though. For example, the 1988 ALC Guidelines note that Grades 1 and 2 and Subgrade 3a collectively comprise

about one third of agricultural land in England and Wales. About half is in Subgrade 3b (moderate quality) or Grade 4 (poor quality). The remainder is Grade 5 which occurs mostly in the uplands.[13] More recent estimates are that Grades 1 and 2 together form about 21% of all farmland in England; Subgrade 3a also covers about 21%.[14]

Box 2 – The development of the ALC system from 1945 to today

1945 – Land Classification Scheme forms a key part of the new post-war planning system. Land Classification Maps showing the broad locations of land, from good quality to poor, were printed by Ordnance Survey, and distributed to councils to inform their reconstruction efforts. [15]

1966 – Ministry of Agriculture, Fisheries and Food (MAFF) Technical Report 11 outlines the national ALC system, which formed the basis for advice given by the MAFF and Welsh Office Agriculture Department (WOAD) on land use planning matters. This system used five grades of land only, with most of the country categorised as Grade 3. Broad brush, high level 'provisional' mapping of the whole country was conducted, and these maps are still called 'Provisional ALC Classification'.[16] The maps are 'provisional' because they were intended to be used as a guide to be supplemented by a detailed field survey to establish the true ALC grade.

1976 - Following a review of the system, criteria for the sub-division of Grade 3 (3a, 3b and 3c) were published in Technical Report 11/1.[17] This recognised the need to distinguish between land in Grade 3 (which makes up around half of agricultural land in England and Wales). At this time ALC assessments became more field-based and site-specific, partly due to limitations of the provisional mapping.[18] The ALC surveys were to inform planning decisions.

1988 – The current ALC Guidelines and Criteria published in 'The Blue Book' / 'Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land'.[19] These Revised guidelines aimed to update the system without changing the original concepts. This combined subgrades 3b and 3c into one and in doing so moved to today's current system of Grades 1-5 with Grade 3 sub divided into grades 3a and 3b.

1988 – 1999 – MAFF staff continue to conduct ALC surveys to inform local plans, large development proposals and minerals and waste sites, with maps and reports available online.[20]

1997 - Planning Policy Guidance 7 (PPG7) provided the policy to protect the Best and Most Versatile Land unless 'significant development of agricultural land is unavoidable.'

1999 onwards – In 1999 MAFF ceased site specific ALC survey work. LPAs responsible for commissioning external consultants to do ALC surveys to inform local plans, ad hoc development and minerals and waste sites.

2012 - National Planning Policy Framework (NPPF) is introduced, stating that 'where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality'.[21] Accompanying

Planning Practice Guidance for the Natural Environment explains why planning decisions should take account of the value of soils and agricultural land classification (ALC) to enable informed choices on the future use of agricultural land within the planning system.

2015 - the Town and Country Planning (Development Management Procedure (England) Order) is introduced which instructs Planning Authorities to consult Natural England on all non-agricultural applications that result in the loss of more than 20 hectares (ha) of BMV land if the land is not included in a development plan.[22] For any plans larger than the 20ha threshold, Natural England need to see and agree with the ALC survey. Natural England is also responsible for Minerals and Waste Consultations where reclamation to agriculture is proposed under Schedule 5 of the Town and Country Planning Act 1990 (as amended).

2024 – The most up-to-date information on ALC grades in England is on the Magic website (Landscape tab).[23] This includes high-level strategic 'Provisional' ALC maps and detailed field surveys including those conducted both before and after the 1988 criteria and guidelines were introduced (Pre-88 and Post-88 ALC reports and maps).

Issues with the Agricultural Land Classification system and its application

There are various issues with the ALC system and with its application currently and in future. These issues raise questions about the accuracy and reliability of the system and whether it is an appropriate tool in land use research and decision-making, as well as about the degree of transparency and accountability it lends to the public of those decisions.

Use of old climate data for ALC grading

The ALC system is made up of data about three main components – site, soil and climate (see Box 1). Whilst some data and features remain constant over time, the gradient of a slope, for example, others have changed, namely temperature and rainfall, i.e. the data which make up the climate component of the ALC grade. The reference period for this data is either the period between 1941 – 1970, for rainfall and field capacity days, or between 1961 – 1980, for temperature. This means that the most recent ALC guidelines from 1988 and the existing estimates for the proportion of land in the respective ALC grades are based on dated climate data.

The Intergovernmental Panel on Climate Change (IPCC) states that warming over land has occurred at a faster rate than the global mean and this has had observable impacts on the land system: temperatures have risen, bringing changing precipitation patters. This has altered the start and end of growing seasons, contributed to regional crop yield reductions and reduced freshwater availability.[24] Indeed, England suffered its second worst harvest on record in 2024 following record breaking rain last winter that reduced yields and disrupted farmers' ability to grow crops.[25]

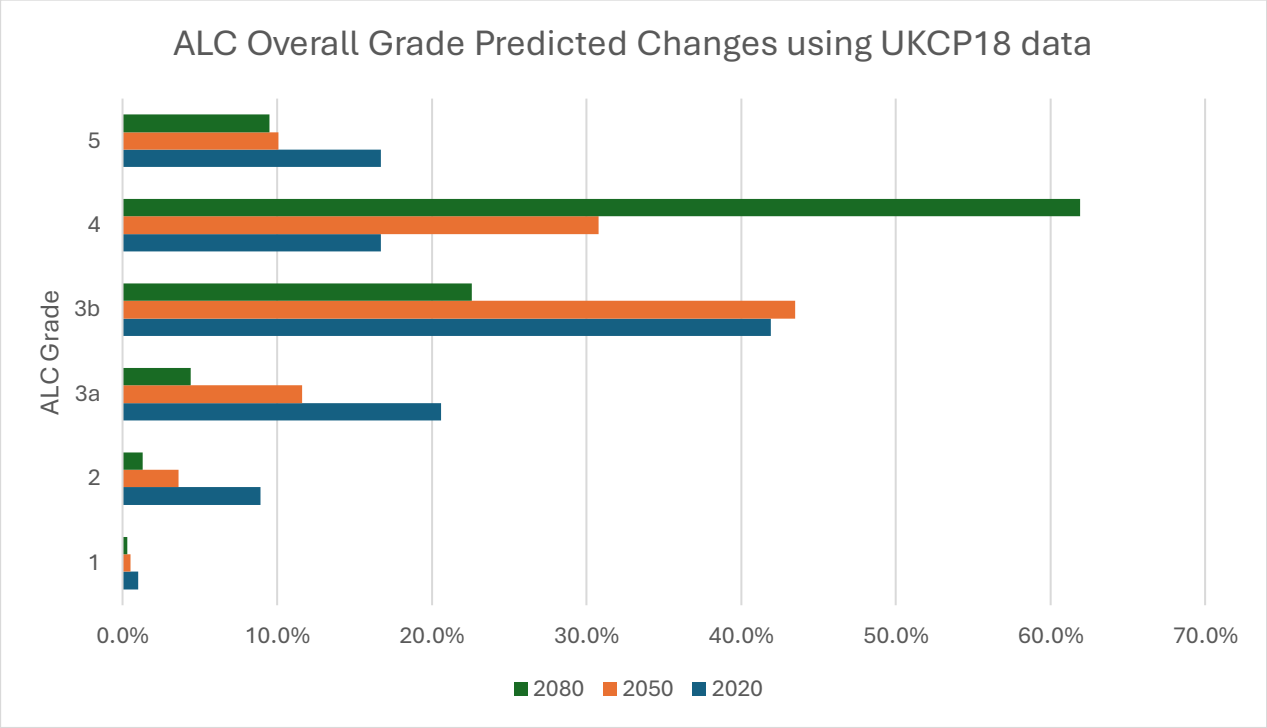
In 2012 Cranfield University and ADAS conducted a study for Defra and the Welsh Government (SP1104) to 'assess how future changes in climate may affect agriculture in England and Wales using the Agricultural Land Classification (ALC) system as a surrogate measure'.[26] Their research used the National Soil Inventory (NSI) 5km gridded dataset to generate ALC classification maps for different climate scenarios (low, medium, high). The study used the time period 1961-1990 to generate a baseline from which relationships are derived to apply to the future climate change scenarios using UKCP09 climate data. In 2020 the research was rerun using more recent climate data, UKCP18.[27]

Table 1 reproduces data from p. 6 of the 2020 study to illustrate that using updated climate data under a high emissions scenario would dramatically alter the overall ALC predicted grade from 1961-1990 levels; reducing the proportion of Grade 1 – 3a BMV land to a predicted 15.7% by 2050. Chart 1 further illustrates this data.

Table 1: Predicted change in ALC grade over time using UKCP09 and UKCP18 data under a high emissions scenario

		2020		2050		2080	
ALC	1961-1990	UKCP09	UKCP18	UKCP09	UKCP18	UKCP09	UKCP18
1	2.0%	0.7%	1.0%	0.3%	0.5%	0.2%	0.3%
2	14.3%	6.1%	8.9%	1.5%	3.6%	0.0	1.30%
3a	21.6%	17.9%	20.6%	5.4%	11.6%	2.7%	4.4%
3b	36.8%	45.1%	41.9%	28.3%	43.5%	14.2%	22.6%
4	14.6%	20.0%	16.7%	54.7%	30.8%	72.7%	61.9%
5	10.9%	10.3%	16.7%	9.7%	10.1%	9.5%	9.5%

Chart 1: Predicted change in ALC grade over time using updated climate data (UKCP18) under a high emissions scenario



The changing climate could bring the ability to grow new crops such as olives and vines in the UK, whilst increasing volatility and more extreme weather is already having an impact. CPRE research in 2022 found that 60% of grade 1 land was in areas at high risk of flooding,[28] whilst the winter of 2023/24 saw the highest number of flood warnings and alerts on England's Grade 1 and 2 farmland since the current winter flood recording system began in 2006.[29] This suggests that extreme weather linked to climate change presents an escalating risk to food production, given the outsized impact of flooding on the most productive land.[30]

The need for up-to-date and accurate ALC climate data is underscored by analysis in Wales which illustrates that generally over the 2020s, the area classified as Grade 1 and 2 land can be expected to increase, mainly due to an increase in temperature over the growing season; but can be expected to decrease in the 2050s and 2080s as the climate has become too dry in some areas.[31]

Impact of farming on lowland peatlands on ALC grading

Whilst the ALC grading doesn't tend to change over time through farming practices, there is one exception: that of lowland peatland. Around 40% of UK-grown vegetables are produced on lowland peat soils,[32] and agricultural practices are leading to loss of the soil resource, degradation and subsidence. Research suggests that intensively farmed soils could lose all their peat topsoil in 50-80 years under current land management practices and with climate change, the rate of degradation could increase, resulting in complete loss in 30-60 years.[33]

The amount of degradation, combined with its increasing propensity to flood and drought, raises questions about the continued accuracy of the current ALC classification of lowland peatlands in the East. In England, 85% of total peatland GhGs come from lowland peatlands drained for agriculture.[34] Future implementation of sustainable land management practices such as rewetting could also impact on the versatility of what can be grown, and therefore on the ALC grade.[35]

ALC survey data use in planning decisions

The aim of the ALC survey is to identify the grade of the land as part of a suite of considerations made by LPAs to inform planning decisions. Whilst some measures to protect BMV land are set out in national policy including the NPPF, which aims to protect best and most versatile land from development, in practice this is not always being achieved.[36] For example, CPRE research has found that since 2010, planning appeals which involved BMV land have had a 46% allowance rate in comparison to a total appeals allowance rate of 25% and that over 14,000ha of BMV land has been lost to development.[37]

If development is permitted on BMV land, Defra guidelines exist for the sustainable management of soils. Whilst this may help retain and protect soils through sympathetic landscaping, planting and soil management, the extent to which land within a development is still protected for food production is questionable.[38]

In terms of solar farm development, although there are provisions within the NPPF to dissuade the development of solar farms on BMV land, evidence suggests that too many exceptions are being made.[39] This is despite research showing that increasing the use of rooftop solar could deliver up to 39% of total electricity demand[40] and would allow BMV land to retain its potential for food production.

Legacy system issues

A collection of issues relates to the age of the ALC system and its evolution over time. The only map of ALC grades for the whole country which exists is a strategic map, which includes just five grades, 1 – 5 (i.e. with no sub-grading of grade 3), and is at a scale of 1:250 000. This mapping was done in the 1960s and is called the 'Provisional ALC Classification'. This strategic map was only intended to be interpreted for areas over 80ha but has been and is still used by some to pinpoint farms and their ALC grade.

In 1974, Grade 3 was subdivided into three grades, then in 1988 into two – 3a and 3b. This minimises the distinctions between 3a and 3b, even though the science dividing them is the same

as for the other grade divisions which has created space for some to propose that Subgrades 3a and 3b are combined, for example for solar farm planning development proposals.

Detailed ALC surveys done since the 1970s have created more detailed maps (scale of 1:10 000) but do not cover the whole country and have limited availability on MAGIC. It is therefore currently not possible to know the amount and distribution of land according to ALC grade. The differing scales of maps is confusing, as is the partial mapping of some but not all BMV land. It is also unclear that the ALC is a system and method for assessing land quality rather than a data set, a map or a collection of data and maps. The language used to identify the nature of surveying and detail of the mapping from 'provisional mapping' to 'post-1988' surveys to the difference between '3a' and '3b' creates more obscurity.

Another issue with ALC surveying is that since 1999, private contractors have been commissioned to do surveys rather than them being done in-house, as was the case with MAFF pre-1999. To be competent in ALC surveying is a skill, based on understanding soil science, encountering many different soil types, and building experience. Whilst the British Society for Soil Science runs introductory ALC training, and Natural England reviews the robustness of ALC surveys and reports for plans over 20ha, there is no accreditation nor quality assurance for areas under 20ha.

These combined legacy issues make navigating and understanding the ALC system unnecessarily complex and impenetrable and a considerable research exercise for the uninitiated, leaving it open to misinterpretation and misuse, including by those making decisions about land use, from planners to researchers and policy makers.

The ALC system: the case for change

The ALC system is based on the physical capability of land, operating independently from land management factors such as stocking rates, inputs, cropping preferences or intensity of use. Notwithstanding the case of lowland peatlands, this means the ALC assessment is not influenced by the circumstances of individual land holdings or farmer preferences which can readily change, for example when land is sold or re-let. With the caveat that the climate data underpinning decision-making on ALC grade is outdated, we understand the ALC system to be a robust method for assessing the inherent capability of the land to support agriculture.

In the context of a changing climate and ever-increasing demands on land, it is urgent that the systems and data used to identify and secure the highest quality land for producing food are fit-for-purpose. The issues we have identified with the ALC system and its application mean that we must ask whether changes need to be made. This is an especially pressing question as the Land Use Framework is developed, not least because as far as we are aware, no other system for assessing the capability of land for agriculture with a LUF is on the table.[41] We can only answer this question by understanding the current limitations of the ALC system and its application alongside more systemic questions about the purpose and goals of land use change.

We do not think the ALC system should be discarded completely, but it cannot continue to be used in its current form and be a legitimate tool in land use decision making without being reviewed. Indeed, the evidence is mounting for a review of the ALC system:

- The Government's own Geospatial Commission critiqued the ALC data and methods for being decades old and not always reflective of current agricultural land quality.
- In its ALC technical review for the Welsh Government, ADAS proposed that a major review of the background climate dataset was required.[42]

- A Freedom of Information request from December 2023 reveals calls for an ALC review from within Defra. Three reasons were given: the age of the data, methods and supporting models; the unreliability of the ALC assessments after 2030 using current climate data; and, to ensure 'high-quality agricultural land continues to be prioritised appropriately in planning and land use decisions, based on current and accurate data.'

We understand that Defra have commissioned Cranfield University to create an ALC map, including Subgrade 3a and 3b land which will be publicly available. Work commissioned by Defra and Welsh Government is also underway to update the ALC guidelines and criteria, providing clarifications in the methodology, including irrigation; alongside the preparation of a new ALC manual to be read and used alongside the ALC Revised Guidelines. These are welcome and should contribute standardised practices by surveyors - but without a review of the ALC system, we don't believe go far enough.

We make four interconnected policy recommendations based on our research.

Recommendation 1: Conduct a review and update of the ALC system
As part of this review, we would like to see:

- the ADAS recommendations from the ALC Technical Review in Wales being appraised for their applicability to England, and implemented here, as a minimum by updating the climate dataset
- reviewing, updating and clarifying the language and terminology associated with the ALC, and making it clearer and more accessible and less associated with the ALC's legacy. Connected to this point, we suggest updating the grades to be 1 – 6 rather than having a subdivision of 3a and 3b
- create an updated map of the whole of England for all grades at the most detailed level practical
- clearer and consistent explanations about the ALC system on government websites including gov.uk, Natural England and MAGIC
- scoping options for accreditation for those conducting ALC surveys and quality assurance of ALC surveys

Recommendation 2: Re-survey and protect lowland peatlands
Following an ALC review, we would like to see lowland peatlands re-surveyed to appraise their current state and ALC grade, given that the ALC grade determined for a piece of land is only accurate for the survey carried out at that time and at that scale. Alongside this, we need to rethink at a strategic level how and where vegetables will be grown in the future given the risks to lowland peatlands from flooding, drought and soil erosion.[43]

Recommendation 3: Better protect BMV land in the planning system
The 2012 NPPF weakened the protection of BMV land in planning decisions. We would like to see it strengthened once more, especially given the reduction of BMV land implied in an updating of the underpinning climate data in the ALC system.

Recommendation 4: Use an updated ALC system as one tool in the Land Use Framework
A Land Use Framework needs to be based on good data about the potential of land for producing food, and this should include data from an updated ALC system. But data is only one tool for guiding integrated land use decision-making on land. Political decisions need to be made about how ambitions for single sectors, from energy and agriculture to housing, biodiversity and climate, can be prioritised and delivered to be more than the sum of their individual parts and make the most of the limited land available, through a multifunctional approach. [44] This requires

good data combined with systems-level thinking and decision-making, which it is imperative that the Land Use Framework enables.

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Gill Shaw	Director, Working with Soils Agricultural Land Classification system course	British Society of Soil Science
Guy Shrubsole	Environmental campaigner and author	Independent
Helen Browning	Chief Executive Officer	Soil Association
Helen Fay	Chief Executive Officer	Sustainable Soils Alliance
Jonathan Scurlock	Chief Adviser, Renewable Energy and Climate Change	National Farmers Union
Kaley Hart	Associate Director of Research	Institute for European Environmental Policy
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Matthew Orman	Executive Director & Public Affairs	Sustainable Soils Alliance
Peter Smith	Professor of Soils and Global Change	University of Aberdeen
Tom Lancaster	Head of Land, Food and Farming	Energy and Climate Intelligence Unit

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[41] The Food, Farming and Countryside Commission, for example proposes the 'BMV classification' as one of the data sources for assessing the optimal uses of the land in The Multifunctional Land Use Framework (December 2023).

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[43] As per the recommendations in The Future of Vegetable Production on Lowland Peat for Climate, Nature and People | WWF-UK

[44] With the food system, for example, the amount of land needed to produce food is connected to how much waste there is in the system, technology and diets. Lowering meat consumption, for example, lowers the land needed to grow animal feed which represents 41% of UK cropland.