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6 The demand for grassland products – a summary

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INTRODUCTION

As a farm management economist, for all of my professional career, concerned with what is happening today and with what can be fairly certain to happen, tomorrow, I find myself in an unaccustomed, and rather uncomfortable role of trying to represent the collective views of the authors who have contributed the eight diverse papers on no less a subject than the demand for grassland products – over the next 20 years. I would like to record my personal thanks to each of them. If I misrepresent any of them, in any way, it is unintentional and I apologise.

In determining the scope and content of this group's presentation I have been greatly assisted by a conveniently small and Reading based steering group consisting of my two colleagues Alan Swinbank and David Hallam, and we have been well supported by Lewis Jollans, of CAS in his capacity as co-ordinator.

The Steering Group's terms of reference

The Steering Group took the view that, in an agricultural context, grass is grown primarily in order to convert it into human food. In particular the demand for grassland products in this sense means the demand for milk, dairy products, beef and lamb – although there are other less important products and by-products. The demand for these commodities cannot be dissociated from the demand for other competing foods and drinks. The Group, therefore, tried not to ignore the demand for food in its widest sense.

Other kinds of grassland 'products' include recreation and amenity. These, it was felt, should not be ignored but, equally, it was agreed that they should probably not become a dominant element in the Group's thinking.

The Group's interpretation of its terms of reference

The Steering Group considered that it had a scene-setting function for the Symposium as a whole and, in order to fulfil this function, it would need to take a broad view of its subject, especially regarding time spans, geographical coverage and possible future uses of grass. At the same time workable boundaries would have to be set. The Group decided, therefore, that it should consider the situation for the remainder of this century; it should not discount the possible future importance of grass in 'new' uses, both in the manufacturing sectors of industry and in the food sector; and neither should the influence of international trade be overlooked.

THE PAPERS COMMISSIONED BY THE STEERING GROUP

It was decided to commission eight papers, to be presented in the following order:

(i) A wide ranging paper, offering a global review of the demand for grassland products and the role of British grassland (Swinbank).

(ii) A series of papers considering some of the key variables that influence the demand for grassland products, ie:

- The changing pattern of consumer tastes, food technology and food processing (McKenzie).
- The influence of nutrition on the future demand for grassland products (Hollingsworth).
- The influence of population and income trends on future food consumption patterns (Ansell).

(iii) A paper drawing attention to existing demand studies, and their inherent difficulties (Hallam).

(iv) A study of the long-term demand for milk, dairy produce and meat (Chapman & Warwick).

(v) A paper, discussing the demand for amenity grassland (Tranter & Tranter).

(vi) A wide-ranging final paper considering possible 'new' uses for grass (Snaydon).

A brief summary of the ground covered in each of these papers and of their principal conclusions now follows, culminating in some general conclusions and comments of my own.

The demand for grassland products and the role of British grassland – A Swinbank, Paper 7

This paper considers: the demand for grassland products from a global standpoint and, as such, was deliberately chosen to introduce the group's thinking. The author deals particularly with the influence of changes in technology, citing the possibilities of new feeds substituting for grass, and new non-grass based products; with international trade, noting that British grassland is neither the sole supplier of British demand, nor is it constrained to supply only British demand; with national and international legislation, which may act to discourage or encourage trade and may seek to discriminate between trade partners (making special reference to the EC and the dairy industry); and with relative profitabilities (prices less costs) of competing forms of land-use and their inevitable influence on the supply of grass.

This paper concludes that:

(i) Paradoxically, a study of the UK's demand for grassland products cannot be equated with a study of the demand for British grassland.

(ii) We live in an interdependent world and it would be misleading to look forward 20 years without recognising that our whole social and economic environment will be subject to change.

(iii) Increasingly, we may be concerned with the characteristics of products, rather than with the products themselves, and where those characteristics can be derived from alternative sources then, unless restrained by legislation, the cheaper resources will tend to replace the dearer.

(iv) Governments cannot forever forbid the introduction of new technologies or products, or perpetuate market imbalances.

(v) Whilst many aspects of society may be revolutionised during the next 20 years, a look back suggests that changes in agricultural policy may be slow; and if those changes are directed towards increased self-sufficiency there are aspects of the equation which could make the plough a major factor in the demand for British grassland.

Changing consumer demand – J McKenzie, Paper 8

This paper considers: the criteria that lead to stability in food habits, the factors that have influenced change historically and the issues which may encourage change in the future. Regional and national variations in food habits are referred to and emphasis is placed on the stability of food habits. Five essential criteria of a sociological/psychological nature influencing food choice are described: food as an aid to personal security, as a means of demonstrating mood, as a compensation for denial, as a means of demonstrating group acceptance and as a substitute for material creativity.

Major factors encouraging change in food habits include: improved capacity to buy, the dynamics of society and trends in food imagery.

This paper concludes that:

(i) We are not yet very good at identifying the way in which demand is formulated within the food field and certainly very poor at predicting how changes will emerge in a free world economy.

(ii) All foods are competitive with each other.

(iii) If food consumption patterns change they usually change because the consumer wants them to.

(iv) There is a good deal acting in favour of the *status quo.* Changes of real consequence are extremely limited; most new products are simply a modification of the form/preserving-method/packaging of a standard item.

(v) Without fundamental new constraints occurring, current food trends are likely to continue, but gradual social changes will have their ramifications.

(vi) Advertising has not been a very significant influence upon choice at the broadest level, and there is little evidence that nutritional knowledge has to any great degree influenced consumer behaviour.

(vii) Any guide towards desired change must include a recognition of likely trends and ensure that we push within the correct context. Important themes in the future will be consumer knowledge, a division in attitudes between nourishment and fun foods and between formal and casual meals.

The influence of nutrition on the future demand for grassland products – D F Hollingsworth, Paper 9

This paper considers: the development of nutritional opinion from the late 1930s and the reasons for the public's current confusion in the matter, especially with regard to the 'often acrimonious controversy' about the nutritional role of fats (as well as sugar and fibres) in the context of nutrition, related disorders and harmful illnesses, notably coronary heart disease and, more recently, cancer. The state of nutritional knowledge is commented on in the context of the consumption of certain specific grassland-based foods.

The author's own recent summary of what is known and believed about diet concluded, in general terms, that 'Many people would benefit by increasing consumption of starch, and including with that starch more cereal fibre, ie, more wholegrains, and decreasing their consumption of sugar, alcohol and saturated fats, whether or not they compensate partly for this by increasing their consumption of polyunsaturated fatty acids. There could also be benefit from increased consumption of vegetables and fruits and decreased consumption of salt . . . For everyone it would be better to avoid obesity by increasing exercise than reducing energy intake'.

This paper concludes that:

(i) Nutritional considerations have not in the past influenced demand for meat and, in spite of recent nutritional advice that meat consumption need not be as great as it now is, people are not likely to moderate meat consumption for this reason.

(ii) Demand for mutton and lamb, particularly in young families, appears to be slackening, but not for nutritional reasons.

(iii) Total average consumption of fat has fallen slightly in recent years, mainly because the type of meat now eaten contains less fat than did the meat of former years.

(iv) Nutritional advice is to maintain the present consumption of milk and cheese.

(v) Demand for butter and margarine is mainly determined by the relative prices of the two foods although there are hints of a moderation in the intake of spreading fats, though since 1975 the trend in the demand for soft margarine appears to have been upward.

(vi) The trend in sugar consumption may be the strongest response to recent nutritional advice.

(vii) There is an inevitable lapse of time between the establishment of nutritional facts and their application.

Prospects for population and income growth – D J Ansell, Paper 10

This paper considers: the role that population and income growth have played in shaping the agricultural sector in the past and are likely to play in shaping it in the future. By its very nature it is less specifically related to grassland and grassland products than some of the other papers offered by this Group. Whilst it is argued that precision is not possible in estimating values for the year 2 000 it is hoped that some insights are given into the orders of magnitude likely to be involved.

The author does not make pretentions to offer more and is at pains to point out that recent uncertainties surrounding fertility have caused official population projections to be regarded not as 'forecasts or predictions of what will happen'. And 'if there are problems (he continues) in predicting changes in the future level of population, these seem trivial compared with those associated with predicting the future course of incomes'.

This paper concludes that:

(i) The most recent projections (1978 based on the 1971 census) suggest a UK population for the year 2 000 of just over 58 millions, compared with nearly 56 millions in 1980 – a 4% increase on the current figure. The author also quotes ranges based on different assumptions.

(ii) Like other older industrialised countries the UK population is

relatively stable. No violent changes are likely either in population, or, therefore, in the demand for food from grassland, emanating from population change.
(iii) The outlook for the UK economy in a period of general (world) economic depression (which the author explores) is not encouraging, and although any forecasts beyond the next few years are extremely tentative there seems little prospect of any significant income growth during the medium term.
(iv) Immediate economic targets are focused on reducing inflation rather than on longer term issues of economic growth.
(v) Low increases or falling rates of productivity limit flexibility in wage negotiation and settlement. Hoped-for increases in private sector borrowing, to offset reduction in the public sector, will be affected by general confidence levels.
(vi) The main determinants of real income growth in the future will be the success of these anti-inflationary policies and the extent, therefore, to which governments are prepared to introduce growth orientated policies.
(vii) A medium growth scenario, suggests the author, might see private consumption increasing at about 3% per annum, but any impact from this on the demand for food would be slight. When incomes rose by 16% in 1970–76, expenditure on food rose by only 2%.

Long-term demand projections – methods and problems – D Hallam, Paper 11

This paper considers: the problems and methods of modern demand projections and provides a background to the demand study that follows it. The author first differentiates between a target (or desired state of affairs) and a projection – an attempt to make scientific statements about non-sample situations determined from sample observations. Projections, based on any assumed determining variables, are also differentiated from forecasts designed to predict what the future value of a variable might actually be, based on the most likely future values of its determining variables.

Single equation models, attempting to predict demand on the basis of assumed values for its determinants, independently of supply projections, are differentiated from simultaneous equation (or equilibrium) models used to predict demand, supply and other factors simultaneously. Such models are clearly the more complex, require more data and, at this stage, require more research into their application. Methodological questions are discussed by the author relating specifically to the measurement and influence of income, the measurement and influence of population, and the problems relating food demand studies conducted at the retail level (as they often are) to demand at the farm gate.

This paper concludes that:

(i) The main purpose of demand projections is to provide useful information to policy-makers and planners and thus to improve resource allocation.

(ii) Major influences on demand are relative prices, income, population, tastes and other subjective factors.

(iii) The value of long-term demand projections is not in question – only their interpretation and appreciation.

(iv) Interpretation and appreciation of demand studies is often hampered by a lack of clarity about the objectives and methods of such studies.

(v) Objectives may relate to setting targets, making forecasts or making projections. A target concerns what is required; a forecast with what is likely to happen and a projection with what may happen (given certain assumptions).

(vi) In practice the distinction between targets, forecasts and projections may not be clear cut and published results may include elements of all three.

(vii) There is a gradual movement in demand study work towards the more sophisticated 'equilibrium' models.

(viii) Unlike forecasts and targets, projections (as defined here) cannot be rigorously compared with actual outcomes. The acceptability of the methodology employed in making projections is, therefore, the principal yardstick by which to assess their value to users. Major changes in policy on the part of users can completely invalidate any previously conducted projection.

The long-term demand for milk, dairy produce and meat – W G Chapman & K S Warwick, Paper 12

This paper considers: likely demand for the major grassland products until the year 2 000. In doing so its main purpose is to set out the factors that should be considered in making long-term consumption forecasts and to make clear that quantitative projections – especially over a lengthy period – should be treated with great caution. Using data from the National Food Survey, the analysis is restricted to the UK although the complication of trade in both directions – pointed out to us by Swinbank – is acknowledged. After discussing the major variables and uncertainties involved, the paper discusses why NFS data was chosen in preference to others; the set of commodities for which separate equations were estimated (liquid milk, cream, condensed milk, butter, cheese, beef and veal, mutton and lamb) and why other commodities were not chosen; the methodology and difficulties underlying the estimates; the structural form of the equations and the price

and economic assumptions they contain. Finally, the actual predictions are presented accompanied by some conclusions.

This paper concludes that:

(i) A high degree of uncertainty surrounds long-term forecasts. The numerous detailed reasons for this are set out by the authors.

(ii) The projections may be of some relevance for decisions which need to be made now and which could be affected by the future demand for grassland but, given the degree of uncertainty, it would clearly be sensible to retain maximum flexibility and to keep under review any decisions which depend in demand forecasts.

(iii) The authors' *per capita* consumption predictions are neatly set out in one table, in quantity and index form, with alternative assumptions about the level of real prices and of real consumers' expenditure.

(iv) The authors tentatively suggest that, within the dairy products group, consumption of butter and condensed milk is projected to fall appreciably, of cheese to rise markedly, while little change in liquid milk consumption is envisaged. The possibility of increased cream consumption is highly sensitive to the assumptions adopted.

(v) The projection for lamb is for significant reductions although the extent to which the recent downward trend will continue over the next 20 years is open to speculation. For beef the range of projections is from no change to an increase of over 15%. Future meat consumption will be highly dependent on developments in incomes and relative meat prices.

(vi) In assessing what the future holds, the authors – again anxious not to over-emphasise the reliability of their or similar predictions – suggest that they are only one piece of evidence to be used, together with other statistically derived estimates and subjective judgement.

The demand for amenity grassland – H E & R B Tranter, Paper 13

This paper considers: the demand for a grassland 'product' which is not agricultural – amenity grass. It is defined as 'any land covered by herbaceous vegetation, composed at least in part of grass species, which has a recreational, functional or aesthetic value, and where agricultural production is not the primary aim'. Amenity grass is, therefore, a wide ranging concept and any attempt to forecast its demand is made difficult by the influence of a variety of public and private attitudes and policies. For this reason the paper concentrates on ideas about the future position and does not attempt to quantify precisely. The comprehensive and review qualities of the paper, however, will extend its value well beyond the proceedings of this symposium.

After a brief incursion into the classification of amenity grassland, by usage function, intensity of management and ownership, the current position and recent trends are reviewed. The three factors most likely to affect future demand – recreational requirements (reflecting leisure time and tastes), functional requirements (a derived demand associated primarily with transport and education) and aesthetic requirements (usually of a decorative nature associated with buildings and other man-made constructions) are discussed. The paper considers construction, maintenance and social costs and concludes with a brief consideration of the factors affecting the supply of amenity grassland.

This paper concludes that:

(i) The complexity of amenity grassland, and the factors affecting its demand and supply, makes precise forecasting a hazardous task.

(ii) The estimated total of amenity grassland in the UK in 1973 was approaching 1 M ha – about 4% of the land surface, 6% of the area of grassland used for agriculture, and 27% of the area not devoted to agriculture and forestry.

(iii) The public sector was (in 1973) responsible for maintaining some 57% of the total area of amenity grassland in the UK, with local authorities being responsible for over 70% of the public sector's share.

(iv) The recent rate of net increase in the area of amenity grassland has been about 1% per year.

(v) The demand for recreational amenity grassland will depend greatly on levels of leisure time and choices about how that time will be used. Current trends point towards an increase in demand of this type over the next 20 years.

(vi) There are suggestions that the functional demand for amenity grassland associated with our road network may increase marginally over the next 20 years, whilst that associated with our rail network and educational system will remain fairly static.

(vii) The future demand for aesthetic amenity grassland will reflect tastes and objectives in both the public and private sectors. There will probably be some increase in demand.

(viii) Whether all demand for amenity grass (especially the recreational) will become effective demand or remain latent will depend on whether supply facilities rise in response to demand, which in turn will depend significantly (but not exclusively) on attitudes of the public sector towards committing further resources to grassland as compared with other competing services and amenities.

(ix) Overall it seems that supply is capable of responding at least partially to any increases in demand which may occur over the next 20 years and

that, while it is difficult to make forecasts, various factors do seem to point in the direction of an increase rather than a decrease in the area of amenity grassland, but an increase that is small in relative terms.

'New' uses for grass – R W Snaydon, Paper 14

This paper considers: the more unconventional, or currently less common, uses of herbage which are likely to develop, either because of new technology or because of rapid changes in the supply of, or demand for, alternatives. It is a speculative paper and the figure accompanying it sets out the possibilities in diagrammatic form.

The paper describes the chemical and physical properties of herbage and then examines the scope for novel uses, in both whole or fractionated form. Fractionation appears to offer the greater scope. The protein could be used as a food for humans and other non-ruminants; the main residue would be largely of value as an energy source and there would also be a number of specifically extracted fractions having a wide range of possible applications. Brief reference is made to economic considerations – ultimately the most important in determining future changes in the use of herbage, but in times of rapidly changing costs of inputs and outputs, sometimes capable of providing a misleading guide as to which processes are likely to be viable in the future. The discouraging effect of the 'energy ratio', on new uses of herbage (without further technological developments) is also referred to.

This paper concludes that:

(i) For sound biological reasons pasture species have been used, throughout history, predominantly to feed domesticated ruminants. There have, however, always been smaller alternative uses, eg, construction purposes.

(ii) There seem few opportunities for the novel use of whole herbage either fresh or dried, given current technologies and demands. Changes in the use of whole herbage, in the foreseeable future, are, however, likely to involve modest changes in the efficiency of utilisation by ruminants. Even with these changes the efficiency of food production will remain much lower for animal products than for crops.

(iii) Agricultural systems based on animal products can still remain economically viable as long as consumers are willing and able to pay high prices for them, in relation to the cost of inputs, and as long as there are areas of land unsuited to crop production.

(iv) Various alternative uses of herbage are already technologically feasible. The most important produce is likely to be protein for human consumption and as a dietary supplement for pigs and poultry.

(v) Fibrous residue has a food value for ruminants equal to the whole crop and could also be used as a source of fuel and as a manufacturing fibre.
(vi) Without further research and technological advances, however, straight economics and energy ratio considerations incline the author towards caution in identifying immediate and viable 'new' uses for grassland.

CONCLUSION

Given the breadth of the subject under discussion in Group 1 (at one stage we began to feel that little short of a world-wide review of the supply and demand for food would suffice!) it is not easy to draw concise and precise conclusions. It was stated in the earlier paragraphs of this paper, however, that 'workable boundaries have to be set' and with that simplification in mind, it is perhaps possible to identify some thoughts that have been common to some of the eight papers which constitute this section – or which are at least not seriously contested by them.

First, there is the complexity of the subject being examined and, in particular, its international ramifications. As Alan Swinbank put it, so succinctly, the UK's demand for grassland products cannot be equated with a study of the demand for British grassland. We live in an interdependent world.

Second, there is the complexity imposed by any attempt to make forecasts about anything (let alone this subject), over a 20 year period – with so many imponderables, private and public, national and international. That does not mean that we should discard demand studies. David Hallam has given us his views about that, but we should define objectives, understand the limitations of the results and the need for other kinds of evidence.

Third, that whilst we must expect the inevitability of change, even if we can't accurately predict it, change is likely to be gradual, difficult to anticipate, but recognisable looking back. Dramatic change in population levels and the level of real incomes – two major influences on the demand for food – are not, it appears, phenomena that we can look forward to in the UK in the foreseeable future.

Fourth, in addition to these stabilising influences in the general socio-economic scene, there are strong personal, social and psychological reasons stabilising consumers' tastes – against which the influence of advertising and, in the short period at least, nutritional education will be relatively ineffective. Long-term social changes will, of course, have their influence; industry and governments must learn to identify these trends and work with them, not against them.

Fifth, there is no evidence from the field of nutritional education, or

from the particular demand study carried out for this Symposium, that we can expect any appreciable change in the *per capita* consumption of liquid milk. Cheese consumption is more likely to rise than to fall. If the demand for sheepmeat (as opposed to meat generally) slackens it is not likely to be for nutritional reasons. If there is a suggestion of a reduction in the consumption of spreadable fats, butter seems likely to be foremost in this trend.

Sixth, whilst some general increase can be expected in the demand for each kind of amenity grass, the quantities involved, whilst difficult to identify, are likely to be relatively small in terms of total UK grassland.

Seventh, any serious attempt to find new uses for grass are most likely to be centred around protein extraction for human and non-ruminant livestock food, given the appropriate technological advances and favourable economic conditions.

These general thoughts condense, perhaps inadequately, a large amount of material and thought in the eight papers contributed in this section. If they portray a somewhat negative conclusion, this no doubt reflects, in part, a reluctance on the part of authors to try to be precise where precision is not possible and in part a recognition that change is more easily identifiable looking back than looking forward. It may also be because I personally have looked in vain – given reasonable expectations of technological advances in farming – for evidence for a contrary conclusion.

The Symposium may, of course, take a different view or feel that the Working Group has left important areas of consideration unworked. There has been little, for instance, about relative prices as such – although they have been implicit parts of several papers. It could be argued also that there has been an abundance of opinion and thought and too little analysis and fact; no quantitative translation of the demand for grassland products into the demand for grassland.

The Group's work is, therefore, offered to the Symposium in the form of a challenge. Have we considered the wrong topics? Have we neglected other important topics? Have we assembled too few facts? Have we drawn too few conclusions, or the wrong conclusions? If the answer to any of these questions is 'yes' we have at least left the Symposium with something to do!