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The options for British farming

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Although as a member of the European Economic Community the United Kingdom adheres to a common agricultural policy designed to provide the commodities required by the Community as a whole, it has to consider also the rôle of its agriculture in saving foreign exchange, as an insurance against possible deficits in supplies from the E.E.C. and possibly as a component of social policy determining the balance between rural and urban sectors. In deciding policy, land capabilities, climatic limitations and increasingly the complex interrelations between agriculture and other industries, notably the food industries, have to be considered and these will be discussed. It is concluded that options include the development of production of perishable crop commodities so to minimize transport costs, adoption of insurance strategies for cereal grain and sugar production, expansion of ruminant meat production with European markets in mind, creation of a self-sufficiency in egg production. Such options call for careful examination of potentials for improvement and the additional or alternative resources required.

The economic importance of agriculture and its related industries in the United Kingdom cannot be emphasized enough and any consideration of the options open to us in the farming sector must take into account the rôle of these industries in our overall economy. Assessment of their importance can be made in several ways. One approach is to estimate their contribution to the gross national product (Central Statistical Office 1975). Consumer's expenditure accounts for 70% of the gross national product of the United Kingdom, and of this 29% consists of expenditure on food and alcoholic drink (Department of Employment 1975). The proportion of our food which derives from home production varies from commodity to commodity and a mean estimate based on cost of food at the farm gate or at the ship side is currently 54% (*Annual review of agriculture* 1976). These facts imply first that economic activities related to the feeding of our population account for almost a fifth of our gross national product, and secondly that the production, processing and distribution of food we produce at home accounts for about 10% of the gross national product or between 7 and 8 thousand million pounds sterling. A perspective on this vast sum is given by comparing it with the value of the oil we hope to obtain from the North Sea. Even with the increase in extraction rate, this amounts to only £5 thousand million in 1980 which is in fact less than the gross output of the farming industry alone measured at the farm gate in 1975.

Other approaches can be made to assess the importance of the agricultural and food industries. Estimates show that they account for 10–15% of our current energy requirement (Blaxter 1975*a*; Leach 1975) while a partial accounting shows that about 15% of the country's manpower is absorbed in providing food (Leach 1975). These latter estimates include both home agriculture and the processing and distribution of home and imported food. Thus, although we are a highly industrialized country, approximately a tenth of our productivity, our energy resources and our manpower can be accounted for by the overall operation of using our land and sea resources to produce the food we consume. The whole agriculture and food complex is undoubtedly one of the more important economic activities in these islands.

If we include all those industries which provide the requisites and services which are used on farms as well as our farms themselves, then farming accounts for over a third of the estimated contribution of 10% to the gross domestic product. If, however, we are more rigorous in our definitions and confine ourselves to the farms of the country, then agriculture's net contribution to the gross national product, that is the value added by the efforts of farmers and workers, is 2.7% of the total and these men and women constitute 2.7% of our manpower.

It is thus evident that the farm sector itself is by no means small and also that it cannot be considered in isolation. Options cannot be discussed without regard to the secondary industries which deal with farm produce. In addition, United Kingdom farming cannot ignore the farming activities in other countries, for the United Kingdom is the leading importer of food in the world and its farmers compete with those from other countries for this market. Competition for the British market is particularly relevant in the context of the European Economic Community (E.E.C.). Following the Act of Accession, we are at present in a transitional phase destined to end in 1978 with respect to adoption of the Common Agricultural Policy of the E.E.C. This policy was primarily designed to provide a common pricing throughout the Community so as to ensure free movement of products within it. That price levels were initially set too high, that agricultural surpluses or mountains consequent on over-production followed, that farm incomes in Europe have not increased as was hoped, that vast monetary disturbances in the last few years have created enormous problems with respect to our own transitional arrangements or that the monetary compensatory amounts designed to prevent trade difficulties due to short term changes in exchange rates have been abused, do not in any way alter the fact that Europe as a whole can easily feed itself. The countries of the E.E.C., including the United Kingdom, are together completely self-sufficient in terms of agricultural commodities with the exception of citrus fruit, certain coarse grain supplies and protein rich feeds for livestock. European self-sufficiency has long been recognized, as is exemplified by the Mansholt plan (E.E.C. 1968) for the removal of 5 million ha of land from cultivation in the Community by 1980 and the even more drastic reduction in agricultural resources proposed in the Vedel plan (MacKerron & Rush 1976).

It is in this new context of being a part of a community virtually self-sufficient in agricultural produce that we now must consider the options which are open to us. In this respect, the formulation of agricultural policy within the E.E.C. is still in a formative stage and various proposals for change could alter the situation; furthermore, the options are not mutually exclusive. First, and obviously, if we adhere completely to the ideal of European union then our farming should be designed so as to rationalize the production of the food commodities that Europe needs. There are clearly types of production to which we are better fitted than other countries by virtue of our land capabilities, our climate and our skill. Secondly, and recognizing that many of the commodities we produce are also produced in Europe, we could compete within the Community not only in our own market but also in the markets of Europe, expanding our agriculture so as to save imports or to earn abroad. Implicit in this argument is the assumption that the additional resources required to augment home production could not be more effectively deployed in some other sector of the economy (Prest 1966).

The United Kingdom, however, cannot abrogate entirely to a supranational body its responsibility for feeding its people, and there are two further options it must consider. First, it has to safeguard the food supply. The argument that certain types of agricultural production,

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and a particular level of total production, should be sustained in the United Kingdom even though this might be uneconomic has long been accepted on strategic grounds. In terms of a modern war involving ourselves this argument is untenable; but in terms of an insurance against failure of supplies from Europe for any reason whatever, it remains, for we have not yet as a people so identified with those across the Channel that we are willing to share in any adversity that might occur as a result of commodity shortages. A further aspect of insurance strategy relates to the protection of our crop and livestock industries against depredations due to pests and diseases present on the continent but not present in the U.K. Some uneconomic production may be necessary simply to prevent importation of diseases and pests which might threaten a smaller viable sector of our industry. There is thus good reason to adopt insurance strategies for certain commodities, and to use resources in what might superficially seem an uneconomic fashion.

Secondly, we have to consider any effects changes in agricultural production might have on our social structures, and decide what balance we wish to strike between the country's various economic activities as these affect the relation between rural and urban society. The economic importance of the food sector has already been emphasized. Rural employment raises other issues. It may be that the regional policy arrangements of the E.E.C. will safeguard certain types of production in remoter areas, but in addition there are amenity values associated with the peculiar charm of the British countryside to consider and equally the peculiar attitudes taken on occasion by the British people to constrain certain farming practices. These latter cannot be ignored. Furthermore, there may well be reason to adjust the average diet of the British people for reasons concerned with the maintenance of good health. Decisions to adjust food supplies in this way should not await Community sanction or be thwarted by the free movement of food within the Common Market. Indeed, delineation of the extent of sovereignty in the field of agriculture and food within the Common Market is obviously a matter of importance. Certainly, the unilateral action of Governments, including our own, within the Community to safeguard their own interests, have been commonplace.

The above options are, in reality, statements about the possible objectives of the United Kingdom's agricultural policy within the framework of Europe. They in turn suggest that our future farming should mainly be concerned with those commodities we are well suited to produce, and those which we can or could produce more efficiently than our competitors. In addition, we should insure ourselves against partial failure of supplies and against the dangers of monocultures, and equally ensure that our farming is balanced, has long term stability, maintains the fertility of the land and accords with the expressed opinion of our large urban population about the amenity that well farmed land provides. Certain components may be regarded as an exercise of our right to protect our posterity; others, the major ones, emphasize that our farming has to compete within a European Community to survive.

These deductions lead to the conclusion that because of our pre-eminence in livestock production and our resources of grassland we should maintain liquid milk production and expand production of cattle and sheep meat, with all that these activities entail with respect to cropping with coarse grains. In addition, with the proximity of markets for perishable products in mind, field vegetables and soft fruit production could be expanded. Malting barley and distilling grain supplies and potato supplies should clearly be maintained. We need insurance acreages of sugar beet and of milling wheat and a pig industry to provide fresh pig meat. Poultry meat production in the E.E.C. as a whole might well move eventually towards the

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large centres of cereal grain production and so too might bacon production, but an egg industry to meet our own needs should be maintained in the United Kingdom.

Such an agricultural strategy involves some consideration of our own needs rather than a complete identification with Europe. There are, however, alternatives. An extreme one leads to the concept of a siege economy in which home agriculture is restructured to meet all the population's needs for food nutrients. That this is possible is exemplified by two theoretical calculations (Mellanby 1975; Blaxter 1975*b*). Each calculation concludes that radical changes would have to take place in the balance of cropping and stocking and in the nature of our diet if such a drastic step were ever thought desirable. A partial self-sufficiency with augmented home production and with contractual purchase of food in world markets is a more realistic version of this approach and indeed merges into the strategy outlined above. In this respect, a Cabinet Office paper issued this year (Cabinet Office 1976) stated: 'It is therefore important that the United Kingdom should keep under review the economics of domestic food production as the world trade pattern changes and the economics of storage as an insurance against sharp fluctuations in supply.' It is obvious that the precise balancing of self-sufficiency and dependence on import for food is not static. The determinants of this balance have been carefully stated by the agricultural departments in uncompromising terms (*Food from our own resources* 1975). This White Paper stated first that 'It is the expected level of prices in sterling terms at which alternative supplies will be available which determines the extent to which the expansion of home production is worth while', and secondly '(It) is the extent to which expansion is justified simply so as to reduce the risks to the economy in terms both of import prices and the reliability of supplies'.

Thus, the overall strategy for British agriculture and the options open to its practitioners are determined by economic forces and political considerations and the options may well change considerably with events, thereby altering the balance which I have proposed. Whatever the balance, however, our farming activities will be judged by their ability to use resources at a cost to the country which compares favourably with the alternatives of import, whether from the European Community or elsewhere. It is the proper management of these resources which we are to discuss at this meeting.

The optimal disposition of resources to maximize their efficient use involves employing methods devised by production economists. Given the quantitative relation between output and inputs and their price and costs, algebraic methods permit the maximizing of profit or, for constant output, the minimizing of costs (Dillon 1968). Whether the values of the output and of inputs envisaged by the State are the same as those perceived by the farmer is another matter. Social cost is obviously not considered at farm level, nor are a series of indirect subsidies on input items which stem from Government support to other industries, nor in an economy as complex as ours is current value in monetary terms indicative of real or future worth. In addition, Government cannot consider agriculture in isolation and its appreciation of the value of the output depends on considerations of effects elsewhere in the economy. For example, at present changes in the monetary compensatory amounts, while favourably changing price structures for farming, would adversely affect consumer prices, possibly augmenting the inflationary rate. The regulation of agricultural prices and of fiscal policies so as to ensure that the reactions of the producer are likely to result in the attainment of national objectives is again a political matter.

Econometric methods equally suppose that the relation between various inputs and output

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can be quantified. They can, but the relations change with time, or rather with advances in technology. Marked increases in the maxima of such functions have occurred with the development of agriculture during the last decades. Thus, in the context of crop production, the pioneering work of Crowther & Yates (1941) has been superseded in terms of definition of optima, largely because of the advent of new varieties of crop plant with changed response characteristics and a better appreciation of nutrient interaction (Cooke 1967). Similarly, the optimal feeding of cows based on maximizing technique resulted in yields of 810 gallons per year when Yates, Boyd & Pettit examined the problem in 1942. Current yields now far exceed this value because of genetic improvement of stock and better appreciation of nutrient needs. Clearly the quantitative relations between inputs and output and response surfaces change as knowledge of the biological limitations on output advances.

In this respect, there is now increasing evidence that many crop responses to fertilizers (Boyd 1970) and animal responses to specific nutrients (Fisher, Morris & Jennings 1973) are not asymptotic reflecting diminishing returns relations. Rather the rate of response is constant until an upper limit is reached when there is an abrupt transition and no response to further input occurs. This implies first that, given that any input is economic, maximal response must be synonymous with maximal economic return, and secondly that the way to increase return is to raise the ceiling on output. There is in this respect no implicit inconsistency in the title of this discussion, which couples greater yield with greater efficiency.

In conclusion, there seems little doubt that despite the vulnerability of the agricultural industry to political expediency, the continuing application of science to farming is likely to result in better use of our basic resources. It nevertheless seems wrong that in our present economic climate, and in the closed community of Europe, the sciences related to producing food have to be used in a competitive fashion: the essence of science is its universality, and freedom from hunger should be the birthright of all mankind.

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