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ISSN 0531 5344
Report No 234

FARMING, FOOD AND CONSERVATION

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January 1990

FOREWORD

In 1989 the University of Exeter conferred on Sir John Quicke the honorary degree of Doctor of Science, in recognition of his significant contributions to the agricultural sector and to awareness of the need for sensitive use of land and rural resources. As a result of this he was then invited to present the special annual lecture delivered to Convocation, the association of graduates of the university.

The Unit is pleased to publish Sir John's Convocation Lecture. The commentary it provides on contemporary problems on the rural scene, the issues it raises and the insight it offers deserve to be available to a wider audience. The three challenges he identifies as now confronting the agricultural industry will form the development agenda for policy and practice throughout the final decade of this century. They are the major themes to which farming must respond, both in the South West and nationally, as it grapples with a pace and pattern of change outside the experience of virtually everyone involved.

Professor J P McInerney
Director

January 1990

FARMING, FOOD AND CONSERVATION

Three challenges face the farming industry at the present time:-

(a) How to satisfy public desires for a beautiful and varied countryside, and for flourishing wildlife in it, with economic prosperity and employment in the rural areas.

(b) How to cope with the problem of farming pollution.

(c) How to respond to the needs of food consumers, and in particular consumer disquiet over food quality and safety.

I intend to look at each of these three challenges in turn, consider why they have arisen now, and how the farming industry should meet them.

A. Background

First, some background. Farming has always been subject to great fluctuations in prosperity. The so-called Golden Age of British agriculture, from about 1830-1875, was terminated with cruel abruptness by the opening up of the North American mid-west by the St Lawrence Seaway and the Canadian Pacific Railway, and later by the introduction of refrigerated storage allowing cheap meat from South America, Australia and New Zealand. A deep depression followed until the Second War, broken by a short burst of prosperity from 1915-1921.

From 1940 until the early 1980's we enjoyed 40 years of relative prosperity. From the 1950's the farming scene was transformed by the application of technology which has produced huge increases in yields and greatly increased production efficiency. As a result, prices of agricultural products at the farmgate in real terms are now less than half those in 1950. But this, after all, is the purpose of technology-to benefit the ultimate consumer in lower cost, better quality, or a higher level of safety. It is worth noting, however, that food prices in real terms are still about the same as they were in 1950. The difference is explained by the much greater value added now, as compared with 1950, by food processors and retailers after the goods have left the farm.

Since 1973 we have been members of the European Community and the Common Agricultural Policy has ensured a continuation of support for farm prices, especially those for cereals and milk. A combination of the continued application of new technology and high support prices has resulted since the early 1980's in the production of food surpluses, particularly in cereals, milk products and beef. The disposal of these has absorbed a higher and higher proportion of the total budget of the Community. This absurd situation has now been brought under control by the introduction of milk quotas in 1984 and a much tighter price support regime introduced at the Council of Europe in February 1988.

The world surpluses of cereals have now almost disappeared - not primarily due to price cuts in the EC and the rest of the developed world, but because of serious drought in the USA in 1988; and because of a series of disappointing harvests in the EC since the marvellous harvest

of 1984, the yield of which has not been equalled since. But I believe we ought to assume that output of cereals and other farm products in developed agricultures will tend to outstrip demand unless tight measures are continued.

The effect on farming of 40 years of high prices, together with research and development devoted in the main to increasing economic output, was that high production (which is very often the best way to cut the cost per unit of output) became the principal, often the sole, objective of most farmers. Concern for the other outputs - such as landscape, wildlife and access - were, by the early 1980's, thought almost to be a sign of eccentricity; they were certainly seen as a distraction from the important task of producing more and more food, regardless of whether or not there was a real customer for it.

How had this strange state of mind come to pass? The whole developed world had supported farming for many years - not only in the EC, but in USA, Australia and New Zealand as well. The Common Agricultural Policy was, until recently, almost the only "common" part of the Common Market. Continental Europe had nearly starved in the winters of 1944, 1945, 1946, and this, together with the perceived need to keep farmers on the land for social reasons, explain the remarkable resistance to allowing market forces to apply to farming.

What justification is there for continued support of agriculture in developed countries? It is probable that, in the developed world, an entirely unsupported agriculture could provide enough food on perhaps two-thirds of our present area. How can we justify different treatment for agriculture compared to other great industries in this country- coal, steel, ship building, textiles? The answer is that other outputs, other goods and services than solely the production of food, have to be adduced for continued public support of our industry. These are landscape, wildlife, recreation, tourism and access.

I believe that the provision of these other goods and services - in short, the maintenance of the rural environment - will be the justification, the only justification, why our industry should not have the same treatment as coal, steel, ship building and textiles. These other goods and services are not peripheral, optional, extras, but are central to the argument for continued public support. The farming industry, Government and the ancillary industries have to bend their minds to the provision of this total mix of goods and services - and to ensure that the public knows they are doing so.

B. The Countryside

Let me turn now to the first of my concerns, how should the farming industry satisfy public desire for a beautiful countryside, and for flourishing wildlife in it, while maintaining economic prosperity and employment in the countryside?

There is a deep desire among many of our mainly urban population for the countryside to be preserved in more or less its present form - or better still, in the form it was when they were children. If this is what the customer wants, we must do our best to provide it. A Daily Telegraph Poll in August 1989 found that 79% of respondents thought that

"farmers are poisoning the land" and "the rural landscape is in serious danger".

Are we more, or less, likely to achieve this objective now that farm incomes are falling - as compared with the relative prosperity of the 40 years or so up to the early 1980's? As regards the economy as a whole it is clear that care for the environment and avoidance of pollution is dependent on national prosperity. Care for the environment is expensive and can only be funded by a thriving economy. Impoverished economies the world over play havoc with the environment, whether in the Third World or in communist countries.

In the case of farming, however, it appears that it has been times of prosperity and the drive for even more output of food that brought the greatest changes in the appearance of the countryside. Hedges were removed, small woodlands cleared, wetlands drained, and perhaps rather too much fertilisers and pesticides applied. All this happened in the drive for rising output, fuelled by high product prices and grants for capital expenditure directed to still greater output. Those days are now over. There is no longer the cash available from farming to fund these destructive improvements. Capital grants for hedge removal ceased in 1985, and for drainage of wetland ceased earlier this year. Farmers in a recession do not make wholesale changes to the countryside. But it would be a mistake to push the argument too far. I believe there to be a benefit in a farmed countryside, kept reasonably tidy. This is true not only in the lowlands, but especially in the uplands - it is not much fun for walkers to have to force their way through waist-high bracken or thick scrub.

So it is not the degree of prosperity or otherwise that determines farmers' treatment of the countryside, but the objectives they perceive- and these objectives have to be much wider, as I have said, than just the production of food.

In recent years the British Government has taken the lead in Europe in adding an environmental slant to the framework of agricultural policies. The Environmentally Sensitive Areas (ESA) scheme was pioneered in this country, and has been followed so far by Germany, the Netherlands and Denmark. We have 19 ESA's designated in the UK, the two in the South West being West Penwith and Sedgemoor. In these 19 areas, selected where valuable landscape features are under immediate threat, farmers are paid so much a hectare for adopting a system of low intensity farming and care for landscape, wildlife and archaeological features. The scheme is voluntary, but almost 90% of eligible farmers have joined. The total area designated is only a small proportion (under 5%) of our total agricultural land area - but they can be looked on as models of the type of support that could have a wider application.

There is then the Farm Woodland Scheme, in which farmers are paid grants for planting trees, and in addition receive an anual payment ranging from £100/ha/year in the high uplands to £190/ha/year in the lowlands. This annual payment continues for 40 years in the case of oak or beech, down to 20 years for conifers or 10 years for coppice crops. Three quarters of the uptake so far has been for the planting of broad-leaved trees.

As regards the surpluses, the main thrust has been the reduction in levels of support agreed at the Council of Europe in February 1988,

together with the introduction of milk quotas in 1984. The reduction of the cereal surplus has been aided by the introduction of the Set-Aside Scheme, in which farmers are paid £80 per acre for not planting at least 20% of their cereal acreage. The land has to be kept with some form of green cover (clover is probably the best), which must be kept tidy, but may not be cropped or grazed by farm animals, except horses. The Set-Aside Scheme is voluntary and Community-wide but has been taken up significantly only in Germany (170,000 hectares) and the UK (58,000 hectares). Payments under the scheme are almost entirely funded by the savings in support that would have been otherwise payable on the cereals no longer grown on this land. In addition there is now a premium scheme for Set-Aside land, available initially in six counties in eastern England, in which farmers receive payments on top of the standard Set-Aside payment for the creation of wildlife habitats. This is in effect a trial to see how effective set-aside could be as a positive means of providing environmental goods - as opposed to paying farmers for doing in effect little or nothing.

I believe this shows that, in the last few years, there has been very considerable progress in changing the support system away from the production of surplus food and in the direction of the maintenance of a beautiful countryside. Can these changes be effective countrywide and at the same time retain a thriving rural economy?

To help in this direction, there has been introduced the Farm Diversification Scheme, with capital grants available for farmers to diversify into alternative enterprises such as the processing of farm produce and timber, farm shops, holiday accommodation, catering, etc. Clearly such ventures are not viable options for all farmers, but the scheme is helpful in getting many to look at alternative ways of using their assets.

C. Farming Pollution

I referred earlier to the Daily Telegraph Poll indicating a widespread public belief that "farmers are poisoning the land". I turn now to the question of how serious is the pollution caused by farming. This is a huge and complicated subject which I can only cover briefly, and I will do so under two headings.

(a) First, let us consider the problem of nitrates in water. The EC directives on drinking water set a standard of a maximum of 50ppm of nitrate in drinking water. Whether this is a sensible standard, or unreasonably tight, is beside the point; the UK has agreed to it and we must comply. (In parts of the USA standards are set even tighter at 10ppm.) In areas of intensive arable production and where the water supply comes from boreholes under it, nitrate levels have been rising steadily for years. It is becoming clear that the nitrate arises, not from the fertiliser bag, but primarily from the particular system of arable production practised. The ploughing and cultivation of soil in arable farming causes the soil bacteria to fix atmospheric nitrogen as nitrate. As a result, there is no arable system round a borehole which can result in water within the EC Standard - not even an organic one. The basis of most organic systems is the sensible traditional practice of alternating grassland with arable cropping; but this means that, on ploughing the grassland in preparation for sowing the arable crop, a hugh dollop of nitrate is released that has built up over the life of the

grassland. This then percolates down through the subsoil to the aquifer many years later. The high nitrate figures for some aquifers now are probably due to the great ploughing out of permanent grassland that took place in the 1940's.

The only safe system of land use around vulnerable boreholes is unfertilised grass or woodland. It is obviously impossible to apply the "polluter pays" principle to farmers a generation or more ago, and so such radical changes in farming systems would have to receive compensation out of the public purse. Discussions are currently taking place between the Ministry of Agriculture, farmers, and other interests on establishing a system of Nitrate Sensitive Areas, how compensation should be assessed, and what systems of farming should be permitted. This would cover the practices of livestock farming, such as the spreading of farmyard manure and slurry, as well as those of arable farming.

The Water Authorities have the alternative of diluting high nitrate water by blending with low nitrate supplies. This may well turn out to be more cost effective in some cases than paying farmers to change radically their farming systems. They also have the option of installing plant to de-nitrify the water. There are, of course, types of farm pollution of watercourses where the "polluter pays" principle should be applied unequivocally. Discharge of animal slurry and silage liquor are two damaging examples - and regrettably, pollution from these sources appears to be on the increase, especially in the South West. Water Authorities have been reluctant to prosecute, and very creditably have proposed to apply resources to advise farmers how to overcome the problems; however, fines have been too low for too long to induce any sense of urgency in the farmers concerned. In addition, the Water Authorities have been aware that their own sewage treatment works are often polluters, and this may explain their reluctance to prosecute farmers. No doubt the National Rivers Authority will take a much tougher line with farm pollution - and high time too.

(b) The greenhouse effect and global warming have enormous long term implications for farming which are both fascinating and very uncertain. But farming's contribution to the level of greenhouse gases has important implications too. Inherently, of course, the planting of trees (and all crops) withdraws carbon dioxide from circulation for varying periods of time, and is therefore beneficial in this respect. I would guess that the rapid reversal of this process that takes place with straw burning after harvest will be yet another reason why this practice will eventually be banned, as indeed it will be in Denmark next year.

A rather more bizarre contribution of farming to the atmosphere, in this case the destruction of the ozone layer, is in respect of the release of methane. As part and parcel of their digestive systems sheep and cattle emit considerable quantities of methane from both ends - and methane is 30 times more effective than CO_2 in destroying the ozone layer! It is this type of unconsidered effect of established practices that will have to be addressed in the future as part of the "greening" of farming.

I cannot leave this section of my talk without referring to the report by Professor David Pearce on Sustainable Development, published in August 1989. To quote (from the Executive Summary) "a major effort must be made to place monetary values on environmental services and values". This concept, that we should put a specific monetary value on environ-

mental goods and on the environment, opens up the chance that we shall be able to define the economic worth of landscape, wildlife and public access. We shall then be able fully to cost the effect of farming practices. Putting a cash value on the environment will enable us to measure trade-offs between the environment and other capital and income. It seems to me to be a refinement of the Environmental Impact Assessments which currently have to be made for major projects likely to have a significant effect on the environment - for instance the construction of large intensive livestock units. To quote again "environmental costs and benefits must be included in all project appraisals".

This approach is a refinement of the "polluter pays" principle by evaluating the payment before the pollution takes place, rather than after - by building the cost of the environmental damage into the real costs of the project before it is embarked on. It also means setting charges on products and resources so that their environmental cost is reflected in the price. To quote from Professor Pearce's own Summary "Sustainable development means changing the signals given to economic decision makers.... Changing signals means changing prices and using the market". This concept of using the market for the provision of environmental goods is of the greatest possible importance for the future.

D. Food Quality and Safety

These environmental aspects of farming are becoming more and more important - but are, dare I say it, of mainly middle class interest. When it comes to the question of the safety, purity and wholesomeness of our food, on the other hand, concerns are felt more widely throughout the population. I would like to spend my remaining time on this, the third of the main challenges to our industry.

For the past 50 years a nearly all-embracing system of government or Community support for agriculture has been in place. This support has covered almost all commodities except eggs, poultry and horticulture. So three quarters of farming output had its prices supported, whether or not there was a customer who was prepared to pay for it. Most farmers did not have to bother about finding a customer - that was done beyond the farm gate and was no business of his. The effect on the industry was, in my view, extremely serious. Too much time and energy of farmers and their leaders went into putting pressure on government to increase the level of support, and much too little into enquiring what the eventual customer wanted. The Ministry of Agriculture became, perforce, a "nanny" to the farming industry, and saw itself as concerned with improving the efficiency of food production on farms. Until the 1980's concern for the environment formed no part of this task, and the results are visible for all to see in the main arable areas - removal of hedges, clearance of woodland, drainage of wetland - all carried out until recently with government encouragement and financial assistance.

But the Ministry is also Ministry of Food, responsible in this role primarily for food safety. So there was an uncomfortable split between the role of encouraging (and virtually managing) the National Farm, and ensuring that the output of that farm arrived on retailers' shelves, pure, safe and unadulterated. Although the Ministry did not "manage" the food processing industry and the retailers of food in the same way they did the bulk of farm production, nevertheless the processors and

retailers were powerful lobbies in the whole food chain - and the consumer had little voice by comparison in this lobbying process.

I believe that the combination within one Ministry of responsibilities for food production and food processing does, in fact, make good sense. A separate Ministry of Agriculture or a separate Ministry of Food would have little political clout in government - and it is surely essential for one regulatory body to cover the whole food chain from farm to retailer. What is required is for the Ministry increasingly to move out of the management of the farming sector - and to encourage much greater participation of the consumer on the various committees concerned with food safety. Both of these processes are now happening.

The farming sector is being encouraged and compelled to become more responsive to customer preference. Increasing numbers of farmers are now starting to deal directly with retailers and customers. The shock of doing so is considerable. When we started our cheesemaking operation in 1973 the sales of our cheese were handled by the Milk Marketing Board. We found this not very satisfactory, and in 1978 decided to market our own output - amounting by then to about £1m worth of cheese a year. This was a whole new world and it did us a lot of good to confront it.

We are increasingly in a consumer-led market and I am sure that the future for farming lies in much more direct involvement in the food chain beyond the farm gate. Consumer demand is interpreted by the retailers and converted to goods on the shelves of the supermarkets. This is their skill and lucky we are that they do it so well. The great retailers are in the forefront of the provision of quality food - whether it be high quality cheese, organic food, or the quality fresh pork that our own business is currently helping Marks & Spencer to develop.

It is this mechanism, the articulation of consumer demand by the retailer back through the processor to the producer that, in my view, is the way forward in the search for higher prices for quality food. Support systems, whether originating from Whitehall as previously or as now increasingly from Brussels, cushion recipients from the realities of the market place. They act as a disincentive to those seeking long term solutions to their poor returns in farming. I believe that the future will involve individual farmers, or groups of farmers, deciding to take their destiny out of government hands and into their own. More and more farmers will decide that the production of basic commodities, to which other parties then add significant increments in value, holds limited prospects for themselves or their children.

Consumers are, very sensibly, becoming increasingly aware and concerned as to how food is produced and processed, what it contains as regards additives and residues, and the likely effect on their health of eating it. Outbreaks of food poisoning from Salmonella in eggs and Listeria in soft cheese concentrated everybody's minds wonderfully - and especially in the Ministry of Agriculture, where defects in their monitoring system became uncomfortably public. Clearly tighter controls must be applied - and must be seen to be applied. A Food Bill is to be introduced as soon as Parliamentary time permits to widen and tighten controls on food safety. This Bill will also propose that the irradiation of some foods should be permitted - subject, among other safeguards, to informative labelling so that consumers know what they are buying.

Perhaps equally worrying to consumers as Salmonella and Listeria is the question of pesticide residues in food, together with veterinary drug residues in meat. A huge volume of work is carried out in this country, in the EC, and in the USA, on the subject of residues in food. This work is undertaken mainly by the manufacturers of the products, but is monitored and assessed by the many expert government committees set up for the purpose. The problem is how to make available this vast amount of information to consumers. I am convinced that governments and food processors are not attempting to hide damaging information. Pesticides on the farm and additives used in food processing are very carefully monitored for any possible effects on human health, and any doubts or disquiets result in the withdrawal of the product concerned.

But consumer distrust over the use of pesticides remains. Pesticides and additives are allowed to be used provided there is no evidence of harm to human health. The assumption is made, has to be made, that no evidence of harm equates with evidence of safety. Many consumers do not accept this. They are worried about a possible cocktail effect, the cumulative effect of many different pesticides together. They are also worried about the long term effect of minute levels of residues over the long span of a human lifetime, compared with the short span of the trials which validated its safety.

No wonder then that such consumers turn with relief to organically grown foods. At Sainsbury's here in Exeter organic food is available on the shelves - but it is often not so attractive in appearance, and is always much more expensive (perhaps 2-3 times) than conventionally produced foods. Organic production is difficult and expensive, and requires a substantial price premium to be economically viable. A high proportion of organic produce is imported, mainly from the continent; there is clearly an opportunity here for British farmers. This is gradually being taken up, but it is a difficult, slow and expensive process to get into. (A government committee has recently recommended standards for organic produce that must be fulfilled before it can carry the appropriate symbol.) There is a long way to go before we can be self-sufficient in organic food. At present about 1-2% of our food is in this category. How far could it rise by, say, the end of the century? Organic enthusiasts have been heard to mention the figure of 20%, but realistically the figure is more likely to be between 5 and 10%.

We shall always have to live with the use of some pesticides and additives, and we have to face the challenge of consumer disquiet about residues. It is a task for the whole food chain from farmer to retailer to confront this challenge. Farmers must use pesticides with great care and restraint, with proper training in their use, and avoid "insurance usage". Crops do not need to be entirely free from weeds, and some damage from pests may have to be accepted in the interests of cutting down the use of chemicals. Lower levels of support prices are likely to help in this process, since every effort will be made to cut down on inputs as margins become tighter.

I am convinced that the great retailers have an important part to play. It is they who are at the sharp end of consumer worries about residues, and in the fierce competition between them they will endeavour to present an increasingly 'green' image for their goods. Labelling is all important - on the level of pesticide residues for instance- although there is great difficulty in presenting so much information on the label.

All this must be done somehow. The whole food chain has to be seen to be taking a great deal of trouble to provide what the food consumer wants - as low a level of residues as possible. We must have respect for the customer and his intelligence, and must not regard as foolish his anxiety, or disbelief in the validity of scientific tests of safety. After all, the disquiet may be more sensible than we at present know. As standards of safety change over the years the acceptable level of residues will shift only one way, and that is downwards. The customer senses this, his disquiets are valid, and we must do our best to meet them.

E. Summing Up

Those of my generation have lived and worked through 40 years of almost no change in the thrust of farming policies. Rampant technology resulting in large increases in yields per hectare and per animal apparently denied the Law of Diminishing Returns. There seemed no end, either to the technology or to the requirement for more and more output. But this agreeable certainty did not last long into the 1980's.

We are now operating in a state of uncertainty. Let us beware of blaming anyone for this - the government for instance. Uncertainty is the normal condition in which most businesses operate, and the management of uncertainty is one of the necessary skills in the armoury of the businessman. What was abnormal was the 40 years after the Second World War, when by and large we did not have to think whether or not there was a customer for our output. Now there are new things to think about.

The three concerns of which I have spoken, far reaching as they may be, are nevertheless such as other industries have to tackle. I have no doubt that farming, once released from an over-great reliance on government support, will be able to meet and surmount them successfully.