

Research Paper 10

Agricultural change in Sussex

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AGRICULTURAL CHANGE IN SUSSEX

PREFACE

In 1983 Dr Tony Binns and Dr Don Funnell, together with Dr Nigel Walford, wrote a chapter on 'Agricultural change in Sussex since 1965' for a book, *Sussex: Environment, Landscape and Society* produced by Sussex University geographers to coincide with the Brighton conference of the British Association for the Advancement of Science. In researching this chapter it became evident that very little published material existed on Sussex agriculture, so the authors embarked on their own investigation involving detailed interviews with a number of farmers on the Coastal Plain, Downs and Weald. The survey yielded valuable data on a variety of large and small farms scattered across East and West Sussex, and indicated the major trends and issues of concern amongst the farming population.

Subsequently, with the support of a Manpower Services Commission Community Programme, a number of booklets on different aspects of farming in Sussex were produced for use with sixth-formers in Sussex schools. These GEMS (Geographical Educational Material for Schools) booklets have been widely used in schools and have met a real need. Sadly, like so much material on agriculture, they are quickly becoming out of date. There is an urgent need for up-to-date information on how farmers are responding to current trends and pressures.

This project has aimed to obtain, present and ultimately disseminate, much needed up-to-date information on the Sussex agricultural scene. The work has been coordinated by Dr Binns and Dr Funnell, but the detailed fieldwork and compilation of the case-studies has been undertaken by Mr Alan Stephens, who was also coordinator of the earlier GEMS project based in the Geography Laboratory at Sussex University.

Using a detailed questionnaire, 14 farm case-studies were undertaken between November 1991 and March 1992 from across the main physiographic regions of Sussex. An attempt was made to select farms which vary in size and enterprise type to reveal the diversity of agriculture in the county.

The authors are particularly grateful to the South of England Agricultural Society (SEAS) and the Sussex Training and Enterprise Council (TEC) for funding the project. Our special thanks go to Mr Jim Green (SEAS), Mr Lionel Ward (ADAS, Lewes), Mr John Hammond (ADAS, Chichester), and to the Principals of Plumpton and Brinsbury Agricultural Colleges. We would like to thank the many farmers of Sussex who so willingly gave us their time, interest and insights and without whom this study would have been impossible. Finally, we would like to thank Sue Rowland, the cartographer in the Geography Laboratory at the University of Sussex for her assistance in the preparation of this report.

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CHAPTER ONE

THE BACKGROUND TO CONTEMPORARY BRITISH FARMING

Introduction

In many respects, British agriculture since the Second World War has been a great success story. There have been enormous increases in output, so that even by the late 1970s the UK was self-sufficient in barley, poultry, meat, eggs and liquid milk. Technical efficiency has risen dramatically with the progressive adoption of increasingly powerful and sophisticated machinery, the use of high-yielding and robust crop varieties, and the application of fertilisers, pesticides and herbicides. Until the late 1970s farm incomes had shown consistent increases, and the conditions of those farm workers that remained on the land improved well beyond that experienced in pre-war years.

This recent so-called 'golden age' of British agriculture was the product of a consistent growth-orientated state policy which had its origins during the 1939-45 war. In the 1930s the Depression had left the countryside in disarray with low-output, neglected farms and a labour force whose main desire was to secure employment outside the sector. The war years saw a firm recognition that agriculture played a critical role in national survival and the state set in train a series of policies which have remained the backbone of agricultural development until the late 1980s. In sum, these policies, especially price support and investment incentives, have provided encouragement to farmers to maximise output from the land. Farmers' representatives were regularly consulted by the government, and the net result has been the impressive production performance noted above. From 1974, with Britain's formal entry into the EC, the system of guaranteed prices was replaced by the provisions of the Common Agricultural Policy (CAP), and output expanded even more along with the improvements in technical efficiency. In 1980, a British document, *Farming and the Nation*, claimed that British agricultural output could well expect to grow at between two and three per cent per year and that such improvement could be achieved "without undue impact on the environment". However, the writing was on the wall; the 1980s witnessed an increasing demand for a dramatic change in direction. This arose from three sources:

1. The rising chorus of international disapproval both from other developed countries (USA and Australia), and less developed countries (LDCs), claiming that the EC's protectionist stance was a breach of a free trade philosophy, and also prevented LDCs from exploiting new markets.

2. The concern within the EC about the phenomenal increase in the cost of the CAP which has risen from £6 billion in 1982 to an estimated £23 billion in 1992, thus absorbing about 60 per cent of the EC budget.

3. The increased awareness of the environmental consequences of this expansionist farm policy, coupled with a shift in the public's perception of the role of the countryside in British society. For several generations it had been accepted that farming interests were predominant, but recent years have seen increasing pressure for a wider view in which public amenity and conservation are considered as equally important matters.

Together these concerns have led to a reappraisal of the role of agriculture, and demands for the overhaul of the CAP. After intense political activity the details of a revised system have been announced, which involve a considerable reduction in payments for cereals and livestock, plus the imposition of compulsory measures for set-aside. These new rules will apply to all farmers regardless of size, and herald a drastic shake-up of the structure of the industry.

State intervention in agriculture and the Farm Support System

Two distinct periods need to be identified:

1. Pre-1974. In the period before Britain entered the Common Market the price support system was organised by the British Government. The scheme provided a guaranteed price for selected commodities up to a specified quantity. It did not matter how much a farmer produced or at what price he sold the output on the market. The farmer knew that he would always receive the prevailing guaranteed price as a minimum up to the quantity limits set. There was no restriction on imports. Buyers could purchase agricultural commodities either from the home market or from overseas, which meant that the actual market prices paid to farmers were fairly close to the prevailing world price. The state made 'deficiency payments' based upon the difference between the level prevailing in the market and what the government thought farmers should receive, in effect covering the extra costs of producing in the UK. Annual meetings between Ministry of Agriculture officials, and representatives of the National Farmers Union provided a forum for discussion about the level of the guaranteed prices. This system acted as a major incentive to farmers to invest in improvements, as they could always be sure of a minimum level of return regardless of actual market prices. As each commodity support was based upon fixed levels of output the scheme did not, in itself, act to finance surplus production. Additional institutional support was provided through the various marketing boards, of which perhaps the most well known is the Milk Marketing Board.

2. From 1974 onwards, British farming became part of the Common Market Farm Support System. Article 39 of the Treaty of Rome provides the framework for the Common Agricultural Policy. Each member state contributes to the European Agricultural Guarantee and Guidance Fund (FEOGA). Expenditure consists of payments for structural changes (farm reorganisation) under the Guidance Fund and (the much larger) payments under the Guarantee section. Import duties are imposed on produce from non-member states to ensure that floor prices are maintained and, in addition, there is the controversial intervention payment system. Intervention buying operates when the internal market price falls below the import price. This can happen if there is surplus production within the community itself. The EC then buys at the agreed floor price and so the commodity 'goes into intervention'. This surplus production becomes the commodity 'mountains' so often discussed in the press and has to be disposed of in such a way that it does not affect the internal price structure. At best it must be sold at current world prices so making a considerable loss.

There have been many proposals for reforming the CAP, but it is important to recognise that the structure of agricultural support is designed not simply to generate an adequate level of farm production, but has wider political and social motivations. As the geography of farm organisation varies within the community, so does the relative impact of community support and hence possible reform measures. In particular, the current level of support and organisational framework assists those farmers who occupy relatively small units which would rapidly collapse if faced with competition from imports. In many of the EC countries these farmers are able to exert considerable political pressure which has made it difficult for politicians to agree to radical reform. In practice, the high levels of support provided by the system has meant that whilst providing a basic living for many small farmers, some 80 per cent of the expenditure is directed to the largest 20 per cent of farmers by virtue of their much larger levels of output. However, it should be noted that a recent report highlighted the fact that only 24 per cent of total community payments went directly to farmers, the remainder being absorbed by traders, processors and others in the food chain (*Agra Europe*, Feb 1992). This alone is a source of considerable dissatisfaction.

In response to the commodity 'mountains' that existed in the 1980s some changes to the system were introduced. These have included the introduction of milk quotas (1984), the co-responsibility levy, and changes to the rules on intervention for beef, cereals, and oilseeds,

whilst in 1988 the controversial set-aside programme was initiated (see below). In 1991 the British government published *Our Farming Future*, as a contribution to the debate which highlighted the need to confront the persistent levels of over-production and high budgetary costs. From within the EC, the Agricultural Commissioner, Ray MacSharry set out proposals based upon severe price cuts and extensions to set-aside. These proposals must be seen against a background of increasing international pressure associated with the Uruguay Round of discussions under GATT (General Agreement on Tariffs and Trade) in which the US in particular seems determined to break the EC protectionist regime.

However, deadlock was broken in May 1992, and agreement reached on proposals for reform, which include a 29 per cent decrease in cereal prices, 15 per cent cut in livestock support, and measures to make set-aside compulsory for all those farmers in receipt of funding. The implications of this are likely to be far-reaching and have yet to be absorbed by the farming community.

Set-aside is one of the most controversial schemes operating under the CAP. The idea originated in the USA which has a long tradition of payments to farmers to reduce output. In the British version, which began in 1988, a farmer agrees to put a minimum of 20 per cent of land under permanent fallow or woodland for at least five years. In return, the farmer originally received £200 per hectare, but an additional £22 has been added for those farmers willing to abide by more environmentally stringent rules. The primary objective is to reduce production in a way that, at least in the short term, does not lead to farmers going out of business. Farmers voluntarily enter into a five-year agreement to manage their land in a 'low intensity' manner, and by the end of 1991 a total of 4,478 farmers had become involved, with an area of 158,847 hectares (*Agra Europe*, Feb.1992). An additional scheme began in 1991, for one year, which involved another 13,000 hectares, so that about 5 per cent of the UK cereals area has been involved. In East Sussex, 3,865 hectares were under set-aside by 1991, whilst in West Sussex the figure was 2,913. The British response, however, has not been as enthusiastic as that of German farmers, primarily because of lower payments in the UK. Now, following the agreement noted above, we can expect a different pattern to emerge if set-aside is to become compulsory in the future.

In Britain there has also been the establishment of Environmentally Sensitive Areas (ESAs) which are designed to conserve and enhance the wildlife and amenity value of the landscape, by encouraging farmers to adopt more traditional farming methods. Currently, there are 19 ESAs, of which the South Downs ESA is of considerable importance in Sussex. It covers an area of 26,738 hectares (of which 22,756 hectares are eligible for assistance) between Eastbourne and Worthing. In 1991 8,700 hectares had been approved for inclusion under a system of 'Tiers'. Tiers I and II involve a farmer maintaining grassland, and banning improvements using herbicides and pesticides (Tier II applies this to river valleys in the area). In return the farmer receives £40 per hectare. More dramatic is the Tier III which is akin to set-aside and involves the reversion of arable land to chalk grassland. Payments for this are currently £240 per hectare. It will be interesting to see the long-term impact of the ESA which, in some respects should recreate the 'traditional' landscape of the Downs. Further details of this project can be found in a report published by MAFF: *The South Downs Environmentally Sensitive Area: Report of Monitoring*, 1991.

The implications of reforms for British farming and the response of the British government

In the 1980s there were distinct shifts in the attitude of the British government towards the farming sector which has conditioned the UK's approach to CAP reform. As was noted above, the post-war period was marked by an attitude which encouraged farmers to produce maximum output and also assumed that almost all matters connected with the countryside were the province of farmers alone. However, both social and political opinion has been changing, and during the last decade new

legislation has signified a shift in orientation. The Agriculture Act of 1986, for instance, emphasised the need to achieve a reasonable balance between the interests of agriculture and the economic and social needs of rural areas, conservation and recreation, whilst the Rights of Way Act of 1990 also tried to clarify the thorny question of access to the countryside. This swing in official viewpoint must be coupled with the British government's strong espousal of CAP reform primarily to reduce its cost. In *Our Farming Future* key issues include a rejection of the social role of CAP policy, greater support for technically efficient farmers, and more environmental sensitivity. Although it recommends that reforms should take place at a rate commensurate with the ability of farmers to adjust, there is no doubting the direction of its emphasis. As a result British farmers are now facing unprecedented pressure to develop new sources of income, and a number of reports highlight the likely consequences of these reforms (RASE, 1991).

Perhaps the most controversial point concerns the question of the long-term demand for agricultural land and the consequent impact on the number of viable farms. This issue can be approached from two related perspectives. First, there is the question of the expected levels of demand for agricultural output, and its implications for the area of land needed for efficient production. Boddington (1989) argues that by the end of this century some 1.5 million hectares may be 'surplus to requirements' from a strictly agricultural viewpoint. Some areas may be absorbed by an expansion of woodland and by new types of farm enterprise, but this would still leave a considerable surplus. Under a competitive market situation, the areas likely to be most affected by the removal of land from agriculture would be those lowlands with only average grade land (grade 3) which is a characteristic of large areas of the Midlands, Kent, Surrey, Sussex and Somerset. The government has publicly committed itself to maintaining support for the Less Favoured Areas, the upland and hill areas in the north of England and Wales, partly to prevent these areas becoming totally depopulated. By contrast, the rich arable lands of the east Midlands and East Anglia, plus the rich grasslands of some areas on the west coast, have a comparative advantage within Europe and hence are likely to remain areas of intensive production. Such a view is closely reflected in the RASE report noted above, which also examines the long-term future of British farming and argues that the notion of a two-tier system should be considered. The competitive areas listed above would be expected to operate in market conditions, whilst the remaining rural areas would be gradually encouraged to shift from agricultural to non-agricultural use.

Second, from the point of view of the individual farmer, the ability to stay in business provides one critical yardstick of success, but this is mediated by individual attitudes to the land. Although an adequate income represents what might be called base-line conditions for survival, many farmers consider the countryside as more than just a medium through which to earn an income, and this conditions their attitude towards pressures for change. However, the evidence of the past decade has shown a consistent real decline in farm incomes. An index set at 100 for 1975, measures 57 in 1980 and 42 in 1988, whilst recent reports have noted that a fall of 14 per cent was recorded between 1990 and 1991 alone (Nix, 1991). The data indicate marked regional variations as well as some distinctly different trends from one enterprise type to another. This variation has always been a feature of the farming sector, but it has been exacerbated by the poor overall levels of returns in recent years.

Such changes in the scale and role of the farm sector arising from shifts in the CAP are likely to have dramatic effects upon farmers. A recent TV programme (Country File, BBC TV 29.3.92) suggested that some 50-60,000 farming families would go out of business within the next decade. The trend in farm income over the last decade has put many farmers under considerable pressure, especially those who have invested relatively recently in the purchase of farm units. Tenants have not been spared as rents have increased. In turn, when faced with the poor economic performance of farmers and the limited ability to fund rent increases, landowners have reduced the investment in capital maintenance. The institutional framework of farm holdings has also been

changing with a decline in the simple 'family farm' and an increase in linkages with the financial sector. Pridmore (1991, p. 11) has argued that: "For the family unit to survive this may require a combination of hard-headed business sense and the courage to try something new. Ironically, the surest way to preserve the way of life so dear to the farming community, may well be to exploit the desire of others to share in that life".

At the same time as farmers have been faced with declines in real income and challenged by demands for CAP reform, they have also been subject to criticisms about their farming technology, mainly by the environmental lobby. MAFF has launched a number of initiatives which seek to change the nature of farming systems, to make them more environmentally acceptable. For example, the ESA scheme, mentioned above along with the countryside stewardship scheme attempt to introduce positive conservation measures such as hedge preservation and pathway development, as well as the direct reduction in intensity through the use of restrictions on arable cultivation. Controls on pesticides, and the monitoring of nitrate use have all been increased.

The total effect, therefore, has been to place farmers in the limelight and demand a rethinking of their role in society. Whatever may be the national benefits that arise from such moves, it does put individual farmers under considerable psychological as well as financial pressure. Some have decided to leave farming altogether, but many have taken up the challenge and examined possible ways to alter farming practices and develop new sources of income. It should be noted that farmers have always been very willing to innovate and diversify. Since the 1950s many new crops have been tried and there have been enormous changes in the technical inputs for arable production. However, now the emphasis is to seek non-agricultural usages for farmland. Since 1988 the British government has offered grants to farmers who wish to diversify into non-agricultural activities on farm holdings. A capital grant of 25 per cent is available for investments up to £35,000. There are a wide range of enterprises eligible for such assistance, including timber, crafts, farm shops, countryside recreation and horse riding facilities.

The current significance of diversification in farming has been analysed by McInerney and Turner (1991). They found that about 40 per cent of farms in England and Wales had some form of non-farming enterprise. These enterprises contributed a significant proportion to farm income (11 per cent) somewhat equivalent to wheat but lower than milk (20 per cent). However, many of the activities surveyed were those which, for many years, have always been part of the farming scene. Of particular importance are contracting and tourism, but the authors remark that "there is no justification for diversification being held up as one of the primary solutions to the problems of declining incomes in farming" (p. 58). This is because of the fact that many of the activities currently being proposed are already almost at saturation point. Indeed the much vaunted 'golf course option' suffers from the simple geographical problem that the market can only absorb a limited number of courses in a specific area. It is evident, therefore, that there will have to be a considerable increase in these alternative non-farming activities if they are to play the role in the future that milk, cereals, and meat have done in the past.

CHAPTER TWO

THE PHYSICAL BACKGROUND TO FARMING IN SUSSEX

Introduction

Before proceeding to examine the impact of the changing framework for agriculture in Sussex, it must be emphasised that farmers are circumscribed in their attempts to develop new enterprises by the environmental framework of their holdings. Many suggestions for new crops, often drawn from warmer climates and successful in one or two years, founder on the vagaries of the climate, whilst poor soils make working conditions very difficult. Sussex is characterised by considerable variation in climate between the coastal and inland areas which, combined with the varied geology, relief and soils of the county, results in markedly different farming conditions. Some areas have a very high agricultural value, others a very marginal value, and some areas are of such low value that no commercial farming occurs.

Geology and soils

On the basis of variations in geology and relief the county can be divided into six regions: The Coastal Plain, the Chalk Downs, the Greensand Ridges and Gault Clay Vale, the Low Weald, the Pevensey Levels and the edge of Romney Marsh, and the High Weald. The different physical characteristics of each of these six regions is reflected in agricultural potential, land use and farming patterns (see Figures 1 and 2).

The Coastal Plain

The Coastal Plain extends westwards from Brighton to the county boundary, widening from only 2 km on the western edge of the Brighton conurbation to over 13 km in the vicinity of Chichester. The area is underlain by a varied geology of sands, clays and chalk, but except for Highdown Hill, to the east of Angmering, the land is very flat or gently undulating and the soils are fertile brickearths and alluvial soils. Over chalk and sandy parent materials, the brickearths give rise to free-draining, brown earths, but over the clays the soils tend to be gleyed at depth. All except the waterlogged alluvial soils are fertile with reserves of nitrogen, phosphates and potash to some depth. In times of drought most have the ability to draw water up into the rooting zone through capillary action.

The South Downs

In West Sussex, the Downs rise gently northwards from the inland margin of the Coastal Plain, for 6-10 km, to reach over 225 m in height at a number of locations along their northern crest, and over 270 m at Butser Hill, the highest point, which is just outside the county, in Hampshire. In East Sussex the crest of the Downs is generally a little lower, rarely exceeding 210 m, and southwards the Downs terminate in the tall cliffs of the coast, which stretch from near Brighton to Eastbourne. The line of the Downs is broken by a series of valleys through which the rivers Cuckmere, Ouse, Adur and Arun reach the sea. The Downs are dissected by a series of deeply incised dry valleys which descend southwards from the crest. Many of these valleys have extremely steep valley side slopes, which makes cultivation impossible.

In East Sussex, the soils of the Downs are mostly thin and very stony, but there are a few areas with more water-retentive clay soils. In West Sussex, the water-retentive clay soils are more common, and large areas of these heavy, easily waterlogged soils are so difficult to work that

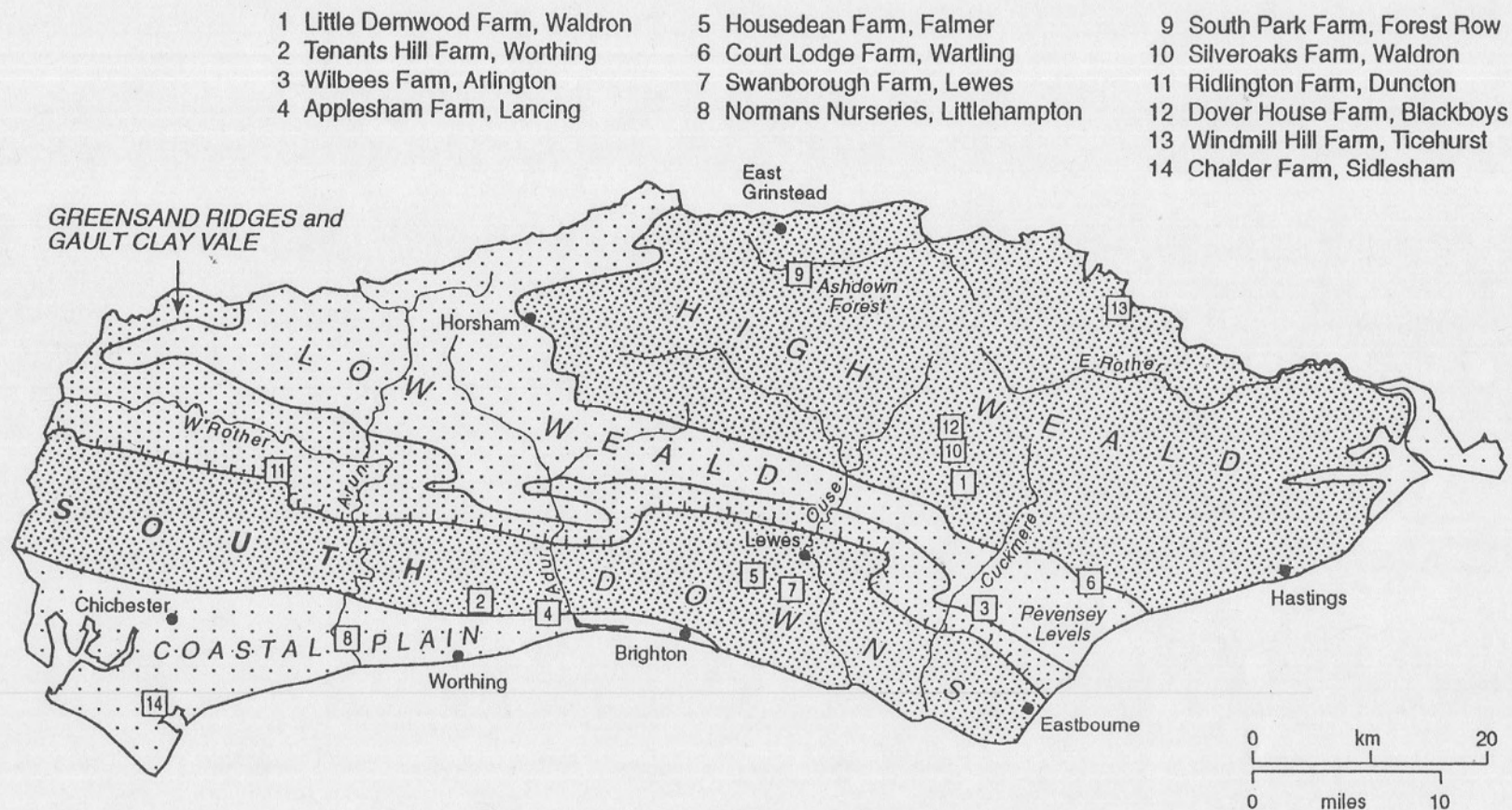


Figure 1. Location map showing farms studied

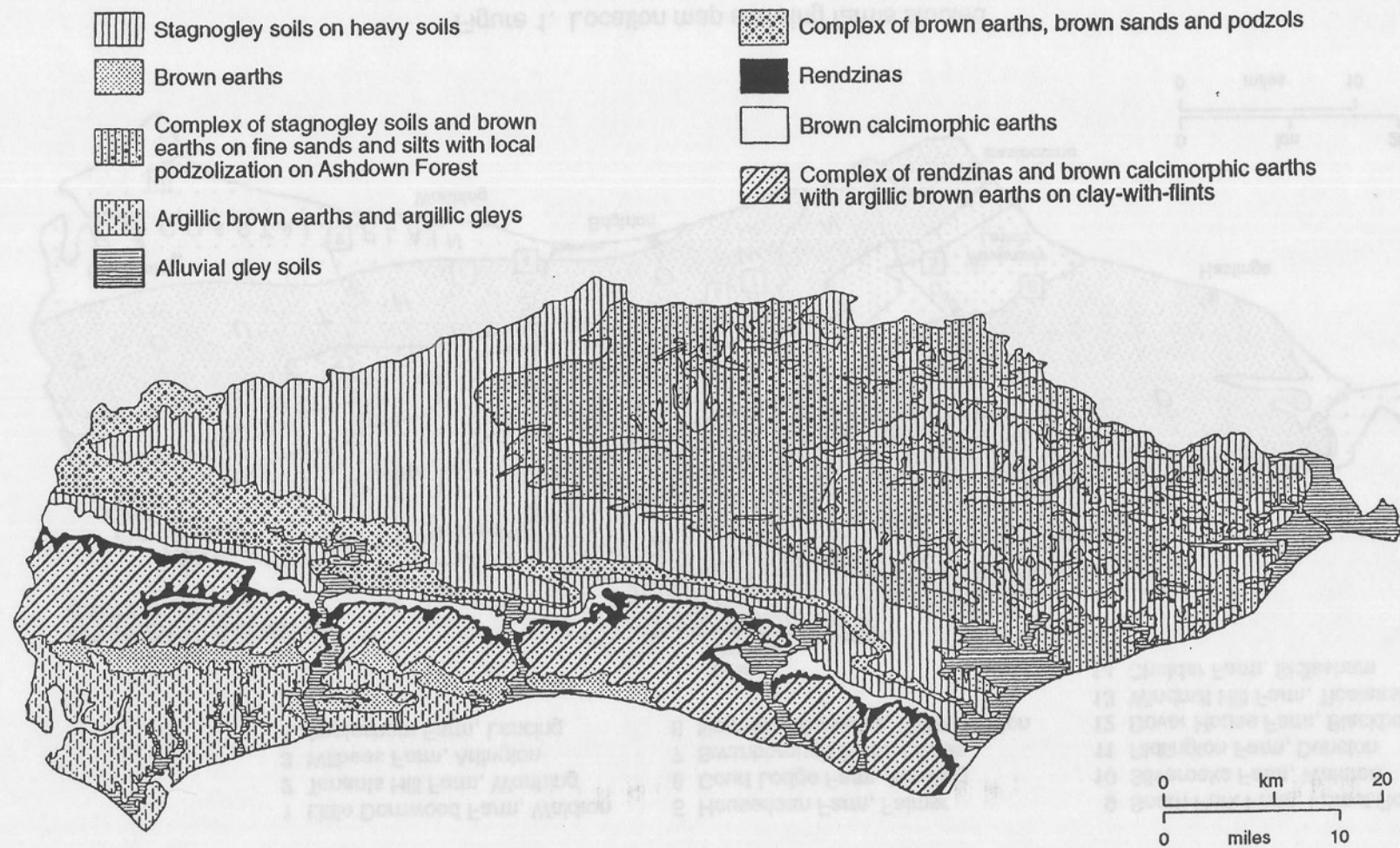


Figure 2. The distribution of soils in Sussex

the land is given over to forestry. The thin, stony soils of the downland slopes tend to become very dry in summer, and this seriously limits their agricultural value. Under grassland, chalk soils become rich in organic matter, black in colour and develop a very stable structure. When cultivated, the organic matter is oxidised and lost from the soils, which become pale grey in colour and their stable nature is destroyed. As a result the soils tend to be very susceptible to erosion by water in periods of wet weather, and to erosion by wind in dry weather.

On many of the higher, flatter areas of the Downs, the soils are developed in superficial deposits on top of the chalk. The most widespread of these deposits is clay-with-flints. Many downland soils contain a considerable amount of wind-blown silt or 'loess' which is thoroughly intermixed with other soil materials derived from the chalk or clay-with-flints.

Greensand Ridges and Gault Clay Vale

In East Sussex, the Greensand is thin and poorly developed, and forms only a low ridge of lighter, more freely drained land lying between the heavy soils of the Gault Clay Vale to the south, and the Weald Clay Vale of the Low Weald, to the north. West of the Adur valley, the Lower Greensand thickens and is subdivided into three distinctive lithological units, known as the Hythe, Sandgate, and Folkstone Beds. The Folkstone Beds are predominantly free-draining sands with poor acidic soils mostly covered by heath or woods. The Hythe Beds contain hard sandstones and form high ground with acid soils that are mostly covered by heath and woods. The Sandgate Beds produce rich red-brown, loam soils that are of high agricultural value and form a low-lying belt of rich farmland. Soils developed on the Gault Clay have a high nutrient content and are potentially very fertile, but they are very water-retentive making them difficult to work in wet weather, and they are easily waterlogged in winter. In contrast, in dry summer weather, they shrink, crack, become very hard, and are again very difficult to work. This limits their agricultural value, except for a narrow zone at the foot of the Downs where enrichment with chalky downwash makes them better structured and of prized agricultural value.

The Low Weald

Underlain for the most part by Weald Clay, the Low Weald is almost everywhere low-lying with only a few small areas exceeding 50 m in height. The Weald Clay is very impermeable and gives rise to heavy soils that are easily waterlogged. The soils are slow to warm up in spring, and cultivation or harvesting can be difficult when spring or autumn is wet. Much of the land is only suitable for pasture, but where under-draining of sloping land can be carried out and on the small areas of more permeable soils some successful arable cultivation occurs.

Pevensey Levels

Between Eastbourne and Bexhill, the Low Weald is terminated at the coast by an area of alluvial lowland that was once a coastal inlet, but which became silted up behind accumulations of shingle, and has been reclaimed from the sea. Some of the soils have developed on materials deposited by rivers, some on materials deposited by the sea. As a result, some of the soils are silty, some are clay rich. The area is very low-lying and is liable to flooding in winter. The water table is always high, especially in winter, when little use can be made of the area. Drainage of the area could be improved, by pumping which would improve the agricultural value of the area, but this would conflict with important conservation and wildlife concerns (eg. Areas of Special Scientific Interest).

The High Weald

This is an area of deeply dissected upland, which stretches across the northern borders of the county from West Sussex into Kent. The area forms the watershed between the rivers which flow south into the English Channel, and those which flow north to the Thames. The land reaches a maximum

height of 240 m at Crowborough Beacon, where the extensive woody heathland known as Ashdown Forest provides a watershed. The landscape is very varied with both deeply incised ghylls, and more gently sloping valleys, especially in the central parts of the High Weald which is underlain by the sands, silts, clays, and minor sandstone bands of the Ashdown Beds. Many areas are poorly drained, and some of the soils are compacted at depth which inhibits the downward movement of water through the soils, and leads to the unexpected waterlogging of even some of the sandy and silty soils during periods of wet weather. Both the floors and slopes of the valleys are of little agricultural value, and large areas are devoted to forestry, or have been incorporated into the many large landscaped gardens in which the region abounds. The majority of the soils have an inherently low nutrient status and require careful management and good husbandry if their fertility and productivity is to be maintained. The results of this process of degradation are most vividly portrayed on Ashdown Forest where, over many centuries, the soils have been progressively robbed of any natural fertility by the cropping and removal of a variety of biological products from the forest: animals, wood, charcoal, turf, and a variety of plants cut for feed, bedding and thatch. The resulting acidic and nutrient-deficient podzolic soils of the forest stand in stark contrast to those of the surrounding areas of enclosed farmland where a combination of artificial drainage, liming, marling, and the application of fertilizers has maintained or improved the quality of the natural soils.

Climate

With an annual average temperature of 10-11°C, the county is one of the warmest in the British Isles. Coastal sites have a milder climate than inland due to the warming influence of the sea in winter and its cooling influence in summer. Annual average temperatures over the whole coastal zone are about one or two degrees Celsius higher than inland, and frost occurs on less than half the number of days it is recorded inland. The average growing season (the number of days with a soil temperature of +6 °C at 300 mm depth) drops from as many as 279 days on the Coastal Plain to fewer than 260 days inland. On average, air frost occurs on fewer than 30 days per year along the coast, whilst many inland regions experience 60 days of air frost and over 100 days of ground frost. Coastal areas are normally free of air frost from early April until early November but air frosts inland are commonly recorded well into May, and then again from mid-October onwards.

The frequency, intensity and duration of frost varies greatly over short distances according to slope, aspect, exposure and soil type, with the valley floors and the foot of steep slopes, such as the base of the Chalk scarp, recording the greatest frequency of frosts. In winter, the contrast in temperatures between the south facing dip slope and the steep, north-facing scarp slope is most noticeable, and the scarp face, which may be in shade all day, often remains covered in frost. On the top of the Downs, hill fog often occurs when frontal system clouds are low enough to cover high ground. During spring and summer the Downs may be affected by advection fog blowing inland from the coast. In the Weald the annual range of temperatures is fairly high due to the continental influence which can produce very low temperatures in winter and high temperatures in summer. Continentality is accentuated by the Downs which restrict the penetration of maritime influences. Temperatures vary little in an east-west direction across the region, but tend to decrease south-north due to increases in altitude.

Hours of sunshine also vary between coastal and inland areas. The coast is one of the sunniest parts of Britain, recording averages of between 1,750 and 1,840 hours of bright sunshine every year. Inland areas receive around 200 hours less. This is due to more frequent cloud cover in summer, and fog in winter. The areas with the coldest temperatures and shortest growing season are the north and east facing slopes of the High Weald underlain by clay soils.

The distribution of rainfall is more complex. The lowest rainfall is recorded on the coastal plain in West Sussex, where some areas receive only 700 mm per year on average. The

greatest average rainfall occurs on the highest parts of the South Downs where over 1,000 mm per year are recorded. Plumpton, at the foot of the Downs near Ditchling, has on average 163.6 rainy days per year. North of the Downs, rainfall totals tend to decrease from west to east. Inland, Ashdown Forest and the High Weald tend to receive high rainfall, but some areas of the Low Weald receive little more than the Coastal Plain. The driest months are March to June inclusive; the wettest is usually November. In recent years farmers have been faced with an increasing water deficit as natural ponds have failed to be replenished by winter rain, and aquifer re-charge has been low. Some specialist enterprises (eg. strawberry cultivation) need irrigation and this has become increasingly problematic as water supplies prove deficient.

CHAPTER THREE

AGRICULTURE IN SUSSEX: A TIME OF CHANGE

Introduction

This chapter examines the changes in agriculture in Sussex in the light of the broader shifts in agricultural policy discussed earlier. Notable changes include the increase in land under cereals, the reduction in numbers working on the land, and the changes that have occurred in the size and structure of farm enterprises. Whilst many of the changes are to be found in other parts of the UK, certain features are specific to the South East and Sussex. Data illustrating these factors are listed in tables in the Appendix.

Unfortunately, there is no easily accessible, comprehensive source of data on British agriculture. This study has drawn on a wide variety of information including the annual handbook produced by John Nix at Wye College: *The Farm Management Pocketbook* (his unit also produces a wide range of interesting studies), documents from MAFF, and many specialist magazines and journals, along with annual reports of agencies such as the Milk Marketing Board. For this chapter the figures are provided principally from the *June Agricultural and Horticultural Census*, which is undertaken annually by MAFF. This information provides the background against which the farm studies outlined in the next chapter can be analysed.

Arable crops

There are approximately 245,000 hectares of agricultural land in Sussex, and its quality varies from first class land on the West Coastal Plain to very poor, Grade 4 land on parts of the Downs and the High Weald. Areas of the Downs and the High Weald have been designated 'Areas of Outstanding Natural Beauty' which, although giving them a measure of extra protection from development pressures, increases the problems for farmers of public access and public sensitivity to agricultural change.

Wheat, barley, and potatoes are the most important arable crops grown in Sussex. Until 1981 barley was the single most important crop with a peak area planted in 1966 of 47,429 hectares. Figure 3 shows how this has declined throughout the 1970s and 1980s to less than half of that total, and in 1989 was 22,316 hectares. About 55 per cent of the barley grown is winter barley particularly for animal feed. A considerable price differential in favour of the high quality malting barley exists. For instance, in 1991 feed barley was fetching around £115 per tonne but the malting varieties could expect a premium price of between £15-25 more.

A major change in land use has been the shift to wheat, which is nationally more important and has a more flexible usage. In 1989 the area under wheat was 41,908 hectares, which is over twice the area in 1977 of 20,520 hectares. The trend in cultivation is illustrated in Figure 3. The expansion of wheat area has been accompanied by an increase in yields, due to greater application of fertilizers, herbicides, and planting of new varieties which are high yielding and of high quality. A good example is the variety 'Riband' which probably accounts for 25 per cent of the wheat planted. The outlets are for milling wheat and increasingly for stock feed. Quality wheat also obtains a premium price.

Cereal yields vary from year to year according to climatic conditions, but the highest yields are obtained from the Coastal Plain, and the poorest from the thin soils of the high Downs and the cold heavy soils of the Weald. Wheat yields in 1990 were estimated to be 6.41 tonnes per hectare for the South East Region, but were over 7.50 tonnes per hectare on the coast. Barley yields

have also increased, so although the hectareage has halved, the total output has only decreased marginally, whilst the output of wheat has increased more than fourfold. Indeed major seed suppliers report that farmers in recent years have been buying seed varieties to maximise yield, rather than using varieties that offer greater protection against disease or frost.

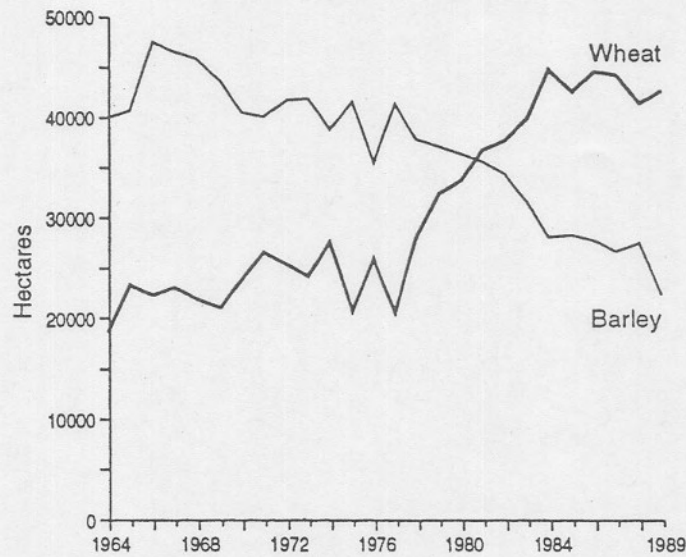


Figure 3. Changes in area planted to wheat and barley

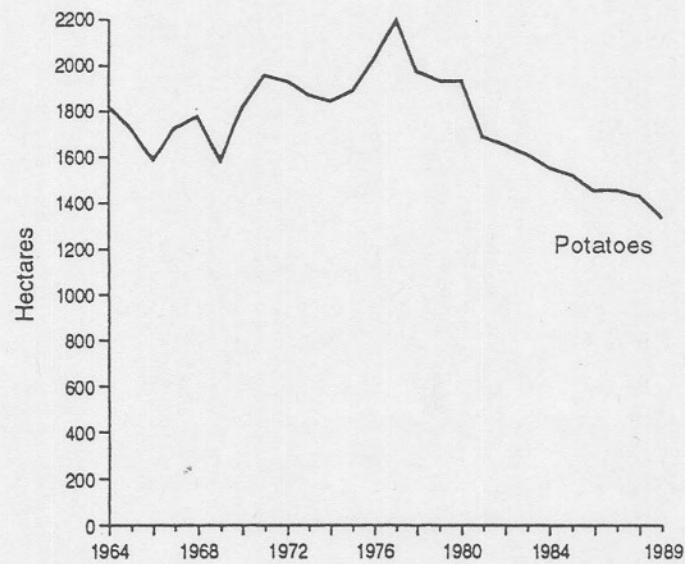


Figure 4. Area planted to potatoes

Potatoes are an important crop on only a limited number of Sussex farms and the trend in plantings is shown on Figure 4. They are particularly common around Climping on the West Sussex Coastal Plain, but are never grown on the light downland soils. In 1977, 2,194 hectares were grown in Sussex, and this area had declined to a total of 1,336 hectares in 1989. Average yields in 1977 were 4.65 tonnes per hectare but they are now estimated to be about 8.00 tonnes per hectare. There has been a decrease in the hectareage of early potatoes as a result of increased competition from Cornwall. Production is now in the hands of specialist growers who are able to meet the high costs of labour or increased mechanisation. By contrast, small growers are now relying more on farm-gate sales as part of the development of enterprises such as farm shops.

Sussex farmers have been keen to experiment with new crops in their search for alternatives to the cereal staples. Forage maize appealed to many farmers in the 1970s but has lost much of its attraction because of difficulties in cooler, wetter summers. Oilseed rape is a crop which has been introduced to meet the demand for a broad-leafed break crop and is grown in rotation with wheat, replacing barley on some farms. Despite a complex payment regime under the CAP, the oilseed rape area has increased in Sussex from 800 hectares in 1980 to 4,590 hectares in 1989. Linseed is another alternative crop which has increased its area in the South East, from only 94.8 hectares in 1983 to a provisional estimate of 25,000 hectares in 1991. The acreage payment and crop value are both high and there is still a shortage in Europe. It is possible to harvest the crop mechanically using existing machines. Other crops that have been tried include sunflowers, lupins, and borage, which is a plant producing an oil in great demand for pharmaceuticals. Peas and beans are grown for human and animal consumption. One of the key features of these new crops is that they reflect a shift in demand from basic foods to raw materials for industry. At the present time they are high value and represent the beginnings of a search for new crops that can utilise farmers' traditional husbandry skills, but provide a satisfactory source of income. In addition, they require improvements in oil extraction technology and marketing arrangements to exploit the potential. However, much more trial and error is yet necessary before what may well be a minor crop today becomes the major arable crop of the next century.

Since the nineteenth century Sussex has been an important county for glasshouse and horticultural crops. By 1989, glass occupied 201 hectares, with a distinct concentration on the Coastal Plain between Worthing and Chichester, but with a few horticultural enterprises to the north of the Downs. Attracted by the good sunshine record of the Coastal Plain, many of these farms grow tomatoes and other salad crops, mushrooms, pot plants, and flowers. Increased competition is being experienced from Mediterranean countries which are now part of the EC, as well as from established rivals such as Israel and Holland. In 1981, there were 899 holdings on 4,499 hectares under horticultural crops, but by 1989 the area had declined to 3,158 hectares and the number of holdings was 862.

The existence of a large car-owning population has helped in the growth of farm-gate sales and pick-your-own enterprises, which are found especially on the Coastal Plain adjacent to the coastal towns, and also inland, especially on the lighter soils of the Lower Greensand.

In 1989, there were 26,741 hectares of temporary grassland in Sussex. This was over 30,000 hectares less than in the 1960s and reflects a decline in the dairy sector. In turn, this led to a reduction in the use of grass leys in arable rotations, and the ploughing up of much permanent pasture. Greater specialisation has reduced the need for animal feed on many arable farms where a cereal monoculture is now common. The organic content of soil on many of these cereal farms has dropped to very low levels, and the soil structure has deteriorated. This, when combined with hedge removal to increase the size of fields, and autumn sowing, has created local problems of erosion, especially on the long, steep slopes of the Downs.

Livestock

There were 14,300 beef cattle in Sussex in 1990, many of which are a by-product of dairying, although single suckling (cows rearing calves for beef production), and fattening enterprises also exist, including some intensive indoor systems.

Sussex was traditionally a major sheep and lamb producer with production concentrated on the Downs. Numbers declined to reach a low in 1971 of 241,764. Since then, the inclusion of sheep in the CAP, the concentration of dairying into large enterprises, poor returns from beef, and the BSE scare, have resulted in the sheep population more than doubling to 494,004 in 1989. Flocks are now widespread, especially in East Sussex, with marked concentration on the small farms of the High Weald, and on the poorly drained lands of the Pevensey Levels. Data are shown in Figure 5.

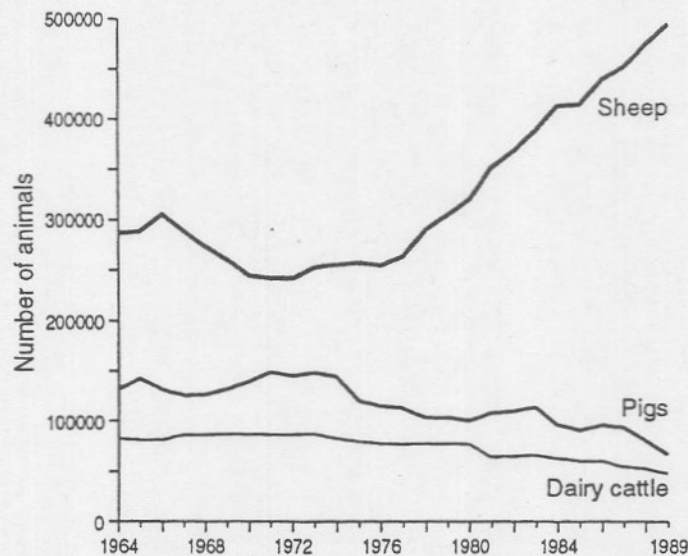


Figure 5. Changes in livestock numbers in Sussex

Although Sussex is far less important for pig rearing than East Anglia and Humberside, this enterprise still plays an important part in the mix of farming activities. There has been a downward trend in the total number of pigs reared, as is shown by Figure 5. It is important to note that pig production tends to follow a cyclical pattern with periods of expansion and contraction. In Sussex, experience with pigs varies widely, with some farmers having now abandoned production, and others becoming increasingly specialised. For instance, Silveroaks Farm, one of the cases presented below, has invested heavily in highly specialised equipment.

Dairying is the most important livestock enterprise in Sussex, but the number of farms maintaining a dairy herd has fallen from 1,900 in the mid 1960s to 392 in 1989. The number almost halved in the last decade. The number of dairy cattle in the county peaked in the 1969-73 period at around 86,000 head, since when numbers have declined by more than 38,000, with much of this in the last decade. This has been the direct result of EC policy which provided incentives for

farmers to cease milk production, as well as the introduction of milk quotas for farmers as a means of limiting output. The national quota agreed under the CAP has been progressively reduced and this has been passed on to individual farmers. This has meant that, according to the latest figures, the national dairy herd has been reduced by 3 per cent in the year 1990-91 alone. This process will accelerate under the new regime to balance the steady improvements in yield. For dairy farmers, plans to match the fall in incomes have been vigorously pursued but are costly. There have been large increases in the capital costs of new specialised buildings and dairy equipment. The labour costs are also high, as the dairyman is often the highest paid of agricultural workers. Some data for the South East region is shown in Figure 6. The average size of dairy herds in the South East region has increased from 84 in 1980 to 100 in 1990. National milk yield per cow was 4,715 litres in 1979-80 and had increased to 5,115 litres by 1990-91.

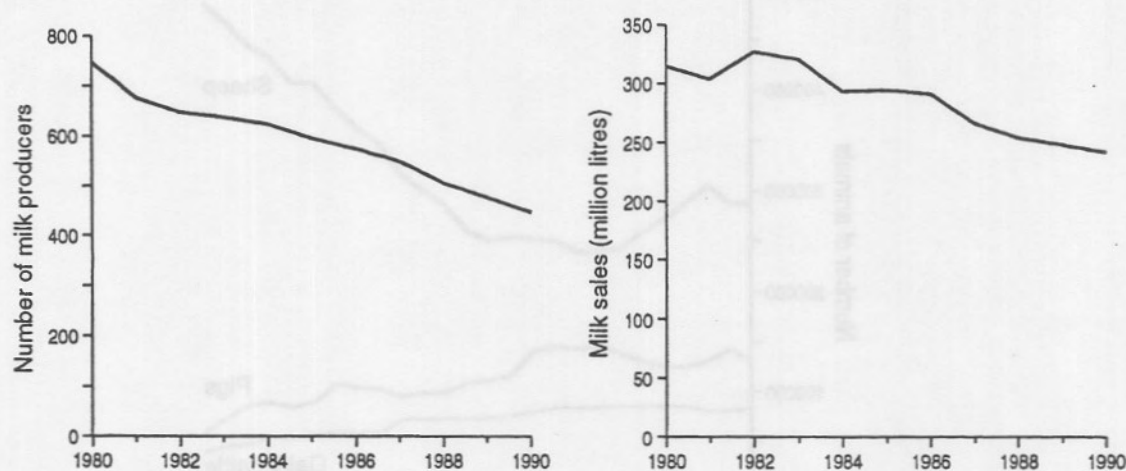


Figure 6. Milk production: South East region

Farm structure

The number of farm holdings in Sussex continues to decline from just over 7,250 in 1965 to about 4,500 at the present time. This decrease in numbers has been accompanied by an increase in size. There are still many small-holdings especially on the poor soils, but many of these are farmed on a part-time basis, often by 'hobby farmers' who obtain most of their income from off-farm activities (Gasson, 1986). In recent years, when large estates have come onto the market, they have been broken up into a number of small plots, each consisting of a house and a few acres of land, which are sold off separately from the bulk of the farmland. The small plots are invariably bought by well-off newcomers to the area seeking a rural lifestyle, but whose interest in agriculture is minimal. The decline in livestock farming, the switch to arable cultivation, increased mechanisation, the increased cost of labour, and the growth of the contract farming business, have resulted in large decreases in the farm labour force. In 1981 the total labour force for Sussex was 18,204, which had fallen to

16,308 by 1989, representing a decrease of 10.4 per cent. Some farms, whilst reducing their permanent work force, continue to employ casual labour during peak work-periods, and rely on contract labour for certain jobs. Mechanisation has not just involved increases in the number and range of machines, and in their cost, but also dramatic increases in their size and power.

As noted earlier the changing framework in which farmers operate has altered the emphasis from increasing output from traditional farm enterprises alone, to seeking other sources of income. In Sussex, the resultant changes are evident both in shifts in the balance of farming enterprises noted in this section, but also in the attempt to introduce new non-farming enterprises, and changes in the approach to farm production itself. These aspects of the current farming scene in Sussex are illustrated through selected case-studies in the next chapter.

CHAPTER FOUR

FARM STUDIES

Introduction

The main purpose of this section is to provide a series of case-studies illustrating how individual Sussex farmers have adjusted to the changing framework of agriculture discussed above. Each of the farmers involved kindly gave of their time, to answer questions and discuss their ideas for future development. Each study contains the replies to a standard set of questions which provide the basis for the categories used below. In order to place the individual experience of each farm in a wider category, this section is followed by an Appendix in which data derived from all Sussex farms are set out.

The farms have been chosen to illustrate the wide variety of activities currently forming the basis of modern farming in the county. However, it is apparent that it is not realistic to compare one farm with another, as each usually has a specific combination of enterprises. Students of the farming sector should be aware of the difficulties posed by this characteristic as there is rarely a 'typical' farm. Indeed, the detailed analyses of economic performance of the farming sector, such as that reported by John Nix, are rarely carried out on a per-farm basis but concentrate on specific enterprises (i.e. pigs, beef, etc.) instead.

The case-studies reveal a wide range of responses to the current pressures on farmers. Some of the farms report investment in diversification schemes which focus on non-farming activities. Redevelopment of farm buildings for offices; golf course plans, and expanding 'country pursuits' are typical examples found in Sussex. Others report an increased interest in new types of agricultural enterprise such as the introduction of a new crop. Finally there are those farmers who have streamlined their existing farming activities, often with increased specialisation, as a way of improving economic efficiency. As was pointed out earlier it is important to recognize the continuing nature of innovation in farming and not over-emphasise the highly publicized activities of just a few individuals.

These responses are a reflection not just of the current economic situation, but also the attitudes of the farmers themselves. It is these individual characteristics that are just as important as the more general economic trends in explaining why a particular farm has chosen one strategy rather than another. This individualism is also illustrated in the varying responses to conservation pressures, where some have embraced the notion of an 'open countryside' in a positive manner but others view this with some reserve.

The following 14 farms provide a cross section of the farming activities in Sussex. The locations of these farms are shown in Figure 1.

Little Dernwood Farm, Waldron, East Sussex

Type and Location	Mixed. Main enterprise poultry, with some sheep and a suckler herd. Little Dernwood Farm is situated in the parish of Waldron in the High Weald. The present owner began farming here 16 years ago with a sheep flock of 400 ewes and a large beef herd. This enterprise was changed in 1985 to a free-range poultry enterprise with a small flock of 100 ewes and a beef herd of 40.								
Tenure	Owner occupied.								
Land Use	<table> <tr> <td>Permanent pasture</td><td>40.5 ha</td></tr> <tr> <td>Woodland</td><td>24.3 ha</td></tr> <tr> <td><u>Rented land</u></td><td><u>16.1 ha</u></td></tr> <tr> <td>Total</td><td>80.9 ha</td></tr> </table>	Permanent pasture	40.5 ha	Woodland	24.3 ha	<u>Rented land</u>	<u>16.1 ha</u>	Total	80.9 ha
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Livestock	The free-range poultry enterprise began in 1985 with 4,000 birds and has increased to 18,000 birds by 1992. The free-range market has been over supplied in the last 12 months, which has led to a drop in price of 24 pence per dozen. Most of the free-range producers are in the South East or South West of the country. The enterprise is in constant danger from salmonella infection and swabs from the birds are sent to an independent laboratory every 3 months. In the event of an outbreak most producers would receive some compensation, but contamination could well result in closure of the enterprise. When the enterprise was established a deep litter system was used, stocked at 10 birds to the square metre, but this was neither entirely satisfactory from the point of view of labour requirements nor animal welfare. In 1988 the system was changed to a perchery one with 16 birds to the square metre on a multi-tier arrangement. The birds also have access to outside pastures from 8 a.m. to dusk, ensuring a good quality of life. The pullets are the ISA breed and are bought at 16 weeks and culled at 72 weeks. The quality of the shell begins to deteriorate at this time and more seconds are produced. Replacement pullets are ordered a year ahead of time. It is important to have a breed of even temperament, which resists physical stress imposed by outdoor conditions of cold and heat, as well as sudden noise and appearance of aircraft, as the farm is on a flight path into Gatwick airport. The number of eggs produced averages 7,000 dozen per week.								
Other Livestock	There is a herd of 40 suckler cows. Previously the farm carried a much larger herd but this was reduced as the labour demand of the poultry enterprise expanded. In the past few years incomes have been depressed and the need to become highly efficient has been the top priority. The beef herd are all continental crosses with as little of Holstein in the cross as possible. They are put to a Simmental or Charollais bull and the progeny reared solely on grass, with vitamin								

supplements in winter. The heifers are kept for 19 months and the bulls for 16 or 17 months before being sold. The cattle are housed in rented farm buildings.

100 sheep are kept all the year. The sheep are all Texel cross Suffolk, providing the good frame of the Texel and the fleshing and finish of the Suffolk. They are kept to control the grass in the fields that the hens range in, and also to utilize the grass to good purpose. Without the grazing by sheep it would be necessary to top cut the grass regularly, as hens will not graze grass which is too long.

Labour

Two full-time and two part-time workers.

**Machinery and
Farm Buildings**

The largest shed housing the fowls was erected in 1988.

Chemicals

The only chemicals used are the disinfectants and small amounts of weedkiller near the perimeter fences to deter foxes. No fertiliser is bought and it is the disposal of excess chicken manure which is a problem. Chicken manure was once sold but the market has disappeared. The National River Authority has new controls on manure disposal, storage, and times of application which are costly and difficult to implement. The amount of manure generated is about 850 tonnes every year.

Conservation

The farmer feels that his prime task is to produce food, but is prepared to embrace conservation measures in so far as they do not inhibit production. The farm contains 24.3 hectares of woodland and until recently logging was carried on, but this is no longer profitable. It would be desirable to make some practical use of the woodland, which the public could enjoy, and also generate an income.

Diversification

The farm has grown in the last 16 years from a holding of about 12 hectares to its present size. Five neighbouring dairy enterprises have ceased and land was purchased from one of them.

Tenants Hill Farm, Worthing, West Sussex

Type and Location	Tenants Hill Farm is a mixed arable and livestock farm on the northern outskirts of Worthing. It includes Cissbury Ring which is a National Trust site on the crest of the Downs. The land has some extremely steep slopes with thin soils.												
Tenure	All the land is rented, one third from Worthing Corporation, one third from Worthing Golf Club, and the remainder from the Rank Hovis company.												
Land Use	<table> <tr> <td>Permanent pasture</td><td>127.5 ha</td></tr> <tr> <td>Temporary pasture</td><td>8.0 ha</td></tr> <tr> <td>Wheat</td><td>12.1 ha</td></tr> <tr> <td>Spring barley</td><td>8.0 ha</td></tr> <tr> <td><u>Linseed</u></td><td><u>14.1 ha</u></td></tr> <tr> <td>Total</td><td>169.7 ha</td></tr> </table>	Permanent pasture	127.5 ha	Temporary pasture	8.0 ha	Wheat	12.1 ha	Spring barley	8.0 ha	<u>Linseed</u>	<u>14.1 ha</u>	Total	169.7 ha
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Livestock	The farm has 400 breeding ewes, an increase from 1987 of 150 reflecting an increased area under pasture. In the 1970s many farmers on the Downs bought sheep from mountain regions of Britain, and this farm concentrated on the Lleyens and Beaulas breed. The ram breeds are Texel cross and Suffolks. The lambs are sold for slaughter from June to October and are currently (1992) worth about £22 per carcass. Due to the increased area under grass some are kept through winter until the following spring. There are 66 store cattle, mainly Friesian/Angus and Limousin/Hereford crosses. These are bought in May or June and kept for 18 months, to be sold in the spring as forward stores.												
Crops and Grass	The farm is just within the limits of the South Downs ESA and about 80 hectares have been taken out of cereals, including most of the hilly land. Linseed is the only crop grown for sale and is both drilled and harvested by contract. The farm produces hay and straw for the cattle. Round bales of straw are preferred as they can be mechanically handled, and rain runs off the surface instead of sinking into the bale and causing the straw to rot. The area of Cissbury Ring was badly damaged in the 1987 gale. Sixty per cent of the trees were lost and the site has not been restored. The farmer has grazing rights for sheep on this area but has not been able to use it for some years as the area is not properly fenced, and includes unprotected yew trees. It has also been an area where sheep have been savaged by dogs. The great increase in bramble and scrub results in sheep being caught by their wool.												
Labour	In addition to the farmer himself, his wife does the accounts and there is one full-time worker.												

**Machinery and
Farm Buildings**

There are four tractors, a combine harvester, and several lorries. Other machinery includes a seed drill, a sprayer, and a corn elevator. Most of the machine maintenance is carried out by the farmer, who is a trained engineer. Contractors are used for some spraying and to make the round bales of straw. The farm buildings include a Dutch grain barn and some newly converted stabling for horses.

Chemicals

Herbicides and fertilisers are used, but in far lower quantities than formerly. The sheep are allowed to graze on the young corn in February for several weeks, and this is an effective method of weed control and manuring.

Conservation

The farmer is part of the ESA scheme which he feels is far superior to the set-aside programme. This is because the ESA encourages land improvement whereas, in his view, the set-aside arrangements may well result in neglect. On his type of farmland this would result in the rapid extension of scrub and weed, not only on set-aside land, but on adjoining areas.

Diversification

The main development has been livery, with 16 horses now stabled in the farm buildings. Land is let for grazing and hay and straw are also provided. The farm is close to Worthing and is easily reached by roads and tracks. Several other recreational activities use the land, such as a model aircraft club and a shooting club. With the success of these other activities the farmer is optimistic about the long-term future of farming. He enjoys running the farm and has derived much satisfaction from developing the enterprises.

Wilbees Farm, Arlington, East Sussex

Type and Location	Wilbees Farm is a dairy farm in the parish of Arlington to the northwest of Polegate in East Sussex. It covers an area of 109 hectares, mainly on heavy Weald Clay, but reaching the Lower Greensand at its southern boundary. It is typical of local farms on the heavy clay soil, which is best suited for use as pasture.								
Tenure	Owner occupied with a small area rented.								
Land Use	<table> <tr> <td>Permanent pasture</td><td>68.8 ha (14.2 ha let to neighbour)</td></tr> <tr> <td>Arable</td><td>26.3 ha</td></tr> <tr> <td><u>Additional rented land</u></td><td><u>14.1 ha</u></td></tr> <tr> <td>Total</td><td>109.2 ha</td></tr> </table>	Permanent pasture	68.8 ha (14.2 ha let to neighbour)	Arable	26.3 ha	<u>Additional rented land</u>	<u>14.1 ha</u>	Total	109.2 ha
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Livestock	The herd now numbers 80 Friesians and 80 replacements. The Friesian bull calves are all sold. Since 1989 a less intensive system has been in use with the herd size being halved, and about a quarter of the quota sold. There has been a reduction in labour input, and milk production is 75 per cent of its previous level. Calving takes place in the months of March and April. The cows are giving higher yields, as grazing in the months of April, May, and June is when the grass is in best condition.								
Crops and Grass	In 1991 26.3 ha of wheat was grown for sale on land not now needed for cattle, and is grown using contract labour and machinery. However, the heavy, poorly structured soils are not suited to cultivation and cereals quite often make a loss. The reduction in stocking rate of the grassland has meant that some of the land is now planted with clover which supplies nitrogen to the soil so that no additional nitrogen is needed. Silage is important as a feed, but the reduction in stocking level means that only one cut a year is needed. The grassland is fertilized with phosphate and potash, but with reduced quantities compared with previous levels of application. Chemical sprays are used sparingly and for a number of years were avoided, but this resulted in a gradual increase in thistles and nettles so that the grazing areas are now treated with herbicide.								
Labour	The farm is a family enterprise run by the owner and one part-time worker who used to be full-time. No casual labour is needed and the new system has resulted in the loss of 1.5 jobs.								
Machinery and Farm Buildings	The milking parlour is an automated 16 standing herringbone, with automatic cluster removal and regulated feeding. The reduction in herd numbers means more space for cows in the yard and sheds. Contractors are used for silage making, dung spreading, spraying, hedge cutting and corn growing.								

Conservation

Since coming to the farm in 1977 the farmer has replaced some of the hedges previously removed for field enlargement. East Sussex County Council have supplied labour to the farm for hedge and tree planting, and a local conservation group have helped in clearing a pond on the farm.

Diversification

As already mentioned, the reorganisation of the main enterprise has allowed the farm to become less intensive. This has to some extent reduced pressure on the environment. The farmer believes that the milk quota system has given a measure of stability and is a good means of controlling production, as it makes farming more extensive and improves conservation.

Two cottages on the farm have been sold, together with three hectares of land.

Applesham Farm, Lancing, West Sussex

Type and Location	Applesham Farm operates beef cattle, sheep and cereals enterprises, and lies within the South Downs on the Upper Chalk. The soil contains many flints and scattered pockets of clay. The farm extends down to the River Adur and contains areas of alluvial brookland. There are Coombe deposits in the valleys.	
Tenure	Owner occupied. This is a family partnership which has worked the farm since 1901.	
Land Use	Temporary rotation grass/clover leys	119.5 ha
	Crops and fallow	173.1 ha
	Steep Downland banks (ESA Tier 1)	29.0 ha
	Permanent pasture	9.7 ha
	Woodland	3.6 ha
	Roads, buildings, yards, etc.	11.6 ha
	Total	346.5 ha
Livestock	There are 380 breeding ewes and 120 replacement ewe tegs on the farm. The lambing season should produce over 600 lambs from the flock. There is a self-contained flock of the Lleyn breed, which replaced other breeds eight years ago. The Lleyn are prolific milk producers, medium in size and with a reputation for being good mothers. The other Lleyn ewes are crossed with Texel rams to produce prime butcher's lambs. Store lambs are finished off on rape between November and January. There are 4 bulls, 95 beef suckler cows, including 30 pedigree Limousin cows, and usually 90 calves are expected from the herd. In addition, there are 25 yearlings. All the cows are put to Limousin bulls. The main feed consists of hay, silage, straw, and barley. Protein is supplied by soya beans which are bought in. Minerals and vitamins are added for balance. The beef herd winters outside and is fed hay, silage, and straw which is laid across the field so that the litter is well spread. In summer the livestock graze on the grass clover leys and also on the steep downland banks. The young cattle winter inside. The steers and the heifers that are not kept for breeding are sold for meat.	
Crops and Grass	The most recent crop pattern has been: 14 ha of forage rape 66 ha of spring barley 94 ha of winter wheat The wheat is of milling quality and the barley is premium malting grade. About two-thirds of both crops are sold to millers or brewers, and the remainder under a seed contract. The forage rape is cultivated for sheep and eaten off the field in winter. All the stubbles are grazed as weeds are regarded as food, and ploughing is made easier as any	

weeds present are buried.

**Machinery and
Farm Buildings**

The farm possesses four main tractors, a combine, fork lift truck, round baler, sprayer, corn drill, a grain drier, grass seed drill, fertilizer spreader, two ploughs, rollers, disc harrow, drag harrow, power harrow and a spring tine cultivator.

Chemicals

Potassium and phosphorous fertilizers are used, and farmyard manure is used on the rape in summer. The amount of nitrogen fertilizer used is quite low as the cereal crop follows a nitrogen-enriching three year grass clover ley. Insecticides are rarely used unless the problem is particularly severe.

Labour

The farm employs the equivalent of four full-time workers including the farmer himself. This is a reduction from five workers in 1981. A student is employed at harvest time. The farm provides its own labour for all requirements and hardly ever employs contract labour.

Conservation

The farm lies within the South Downs Area of Outstanding Natural Beauty and new buildings and newly planted trees have been carefully blended into this landscape. Regular soil analyses are taken and the farm is associated with the Sussex Farming and Wildlife Advisory Group. The steep downland banks support a great variety of plants and insects, some of them rare. To prevent scrub encroachment the downland has been incorporated into the valley rotation so that it receives regular grazing. There are three ponds of high wildlife value on the farm. A selective programme of tree felling and planting has been followed. Studies of grey partridge population began in 1968 as part of a game conservancy project. This shows flourishing populations of a bird which has declined rapidly elsewhere. Success is attributed largely to careful pesticide use and mixed farming agricultural practices such as under-sowing.

Diversification

In the last ten years there have been changes to the main enterprises on the farm. The arable area has declined from 198 ha to 173.1 ha; winter wheat from 117.5 ha to 94 ha, and winter barley has been replaced by spring varieties. There has been a small decline in the area of forage rape. The number of breeding ewes and tegs has increased from 420 to 500, but the number of cows has remained virtually unchanged. Up to 1991, 29 ha have been put into the ESA Tier 1 scheme. The farm is operated as an integrated unit with each enterprise offering some input to another section of the farm.

The farmer is pessimistic about the future of farming, believing that more skilled labour will be shed, that young people wishing to take up farming will find it increasingly difficult to do so, and that many marginal farms will not survive. Land will be left untended and could become derelict.

Housedean Farm, Falmer, Brighton

Type and Location	Housedean Farm is situated in Falmer parish, to the north-east of Brighton. It is primarily an arable farm with a small beef enterprise. The farmland lies on both sides of the A 27 road in the valley of the Winterbourne and extends far up the valley sides. (see Figure 7). The farm lies on rolling downland and the soils are a thin loam overlaying chalk. There are many flints and, in some fields, areas of clay caps.	
Tenure	Owner occupied (129.5 ha) and rented (202.3 ha).	
Land Use	Arable	259.5 ha
	Permanent grassland and ESA	72.0 ha
	Total	331.5 ha
Livestock	There are now only 30 calving cows, the total falling from 50 in recent years. Cows are Hereford-Friesian cross put to a Charollais or Limousin bull. The calves are born in July and kept for 18 months before sale. The reduced beef herd reflects the fact that beef production is less economic than cereal production due to a fall in demand from abattoirs. This has resulted in an increase in arable, as the grass which was grown as a break crop has been replaced by cereals. Currently, the beef herd utilises land which is unsuitable for ploughing.	
Crops and Grass	Spring barley	114.9 ha
	Winter wheat	78.8 ha
	Winter barley	48.4 ha
	Linseed	17.4 ha
	Total	259.5 ha.
	There has been a change to winter barley for malting use and the wheat grown is now a feed variety. Linseed is a new crop which is spring sown, and has a good acreage payment and good price. It also can be harvested using the same machinery as for the cereals. All the crops grown on the farm are sold and feed for the livestock is purchased.	
Labour	Four full-time workers are employed, of which two are actually hired in. The amount of farm labour has been falling since 1967.	
Machinery and Farm Buildings	There are four tractors, one JCB telescopic handler, corn drill, baler, combine, forage harvester, and two 'four furrow' reversible ploughs. A contractor is used for round baling.	
Chemicals	Fertilizers are used on spring and winter crops, whilst spraying of fungicides and insecticides is carried out when necessary. The use of chemicals is less intensive.	

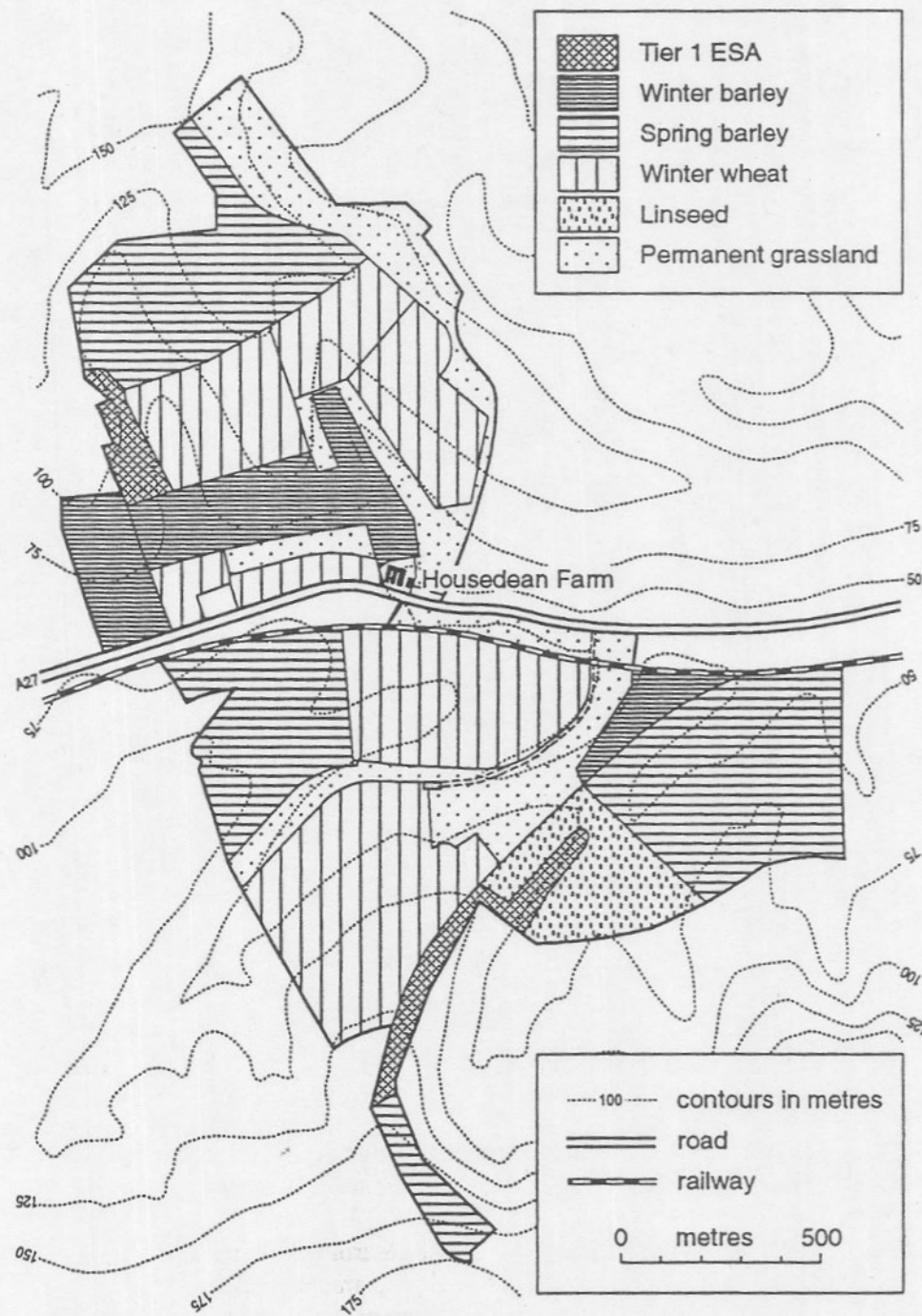
Conservation

Eight hectares have been placed into Tier 1 of the ESA. This is the first year that this has been entered. The farmer believes conservation to be important on the farm, but argues that environmental problems have been exaggerated by the media. He thinks it is worthwhile to keep pockets of wild land, even though much of the Downs in this area has been ploughed for a very long time. Although sheep were kept on the farm at the turn of the century, it would be necessary to invest in equipment, fencing and a sheep dip if sheep were to be introduced again. There is also the problem of dogs worrying the sheep in an area so close to Brighton.

Diversification

The farmer argues that little opportunity exists. This year he has sold flints for facing on the bridge at Coldean on the Brighton by-pass. He is not attracted to other non-traditional areas of farming and is generally pessimistic about the future of farming, noting that the plans for extensification under the CAP will mean a waste of resources.

Figure 7. Housedean Farm, Falmer, Brighton



Court Lodge Farm, Wartling, East Sussex

Type and Location	This is a dairy farm situated on the northern edge of the Pevensey Levels. The farm consists of both former marshland with a silty soil and better drained soils on the Greensand. A map of the farm is shown in Figure 8.	
Tenure	Owner occupied.	
Land Use	Permanent pasture	55.5 ha
	Leys	11.4 ha
	Arable	54.2 ha
	Set-aside	28.5 ha
	Countryside Stewardship	11.0 ha
	Woodland	2.4 ha
	Total	163.0 ha
Livestock	There are currently 124 cattle of which 88 cows are in milk, 18 heifers in calf and 18 calves. The breed is Friesian-Holstein. A.I. bulls from Holland, USA and France are used, but for non-dairy cattle a Limousin breed is employed. The quota system has restricted milk output but the farm has purchased 50,000 litres of quota and leases 50,000 more. All milk is sold to the Milk Marketing Board. The main inputs to the dairy enterprise are a maize gluten feed and a cheaper compound. Silage is grown on the farm.	
Crops and Grass	Winter barley	18.8 ha
	Winter wheat	15.4 ha
	Linseed	16.4 ha
	The arable area has been reduced in the 1991-92 season because of set-aside. All the crops are sold off the farm to merchants at harvest. Oilseed rape was grown as part of a rotation but has been replaced by linseed which has a better subsidy. However other crops are under consideration, for example, a new variety of sunflower with shorter stems, or borage. There is a need to investigate marketing facilities.	
Labour	The main labour input is from the farmer and also his wife who looks after the office and other duties. One part-time worker is employed for the dairy, who shifts to a full-time basis just for the summer period.	
Machinery and Farm Buildings	Keeps machinery requirements to a minimum using three old tractors. All main tasks on the arable are carried out by contractors.	
Chemicals	Herbicides are used to control blackgrass and wild oats which cause problems on the low lying arable areas. Land put into set-aside will not be sprayed. The farm pays an annual drainage fee to the Water Authority who keep the main drainage dyke clear. Farmyard manure is	

used but urea is purchased. The farmer is very conscious of the costs of sprays and drainage.

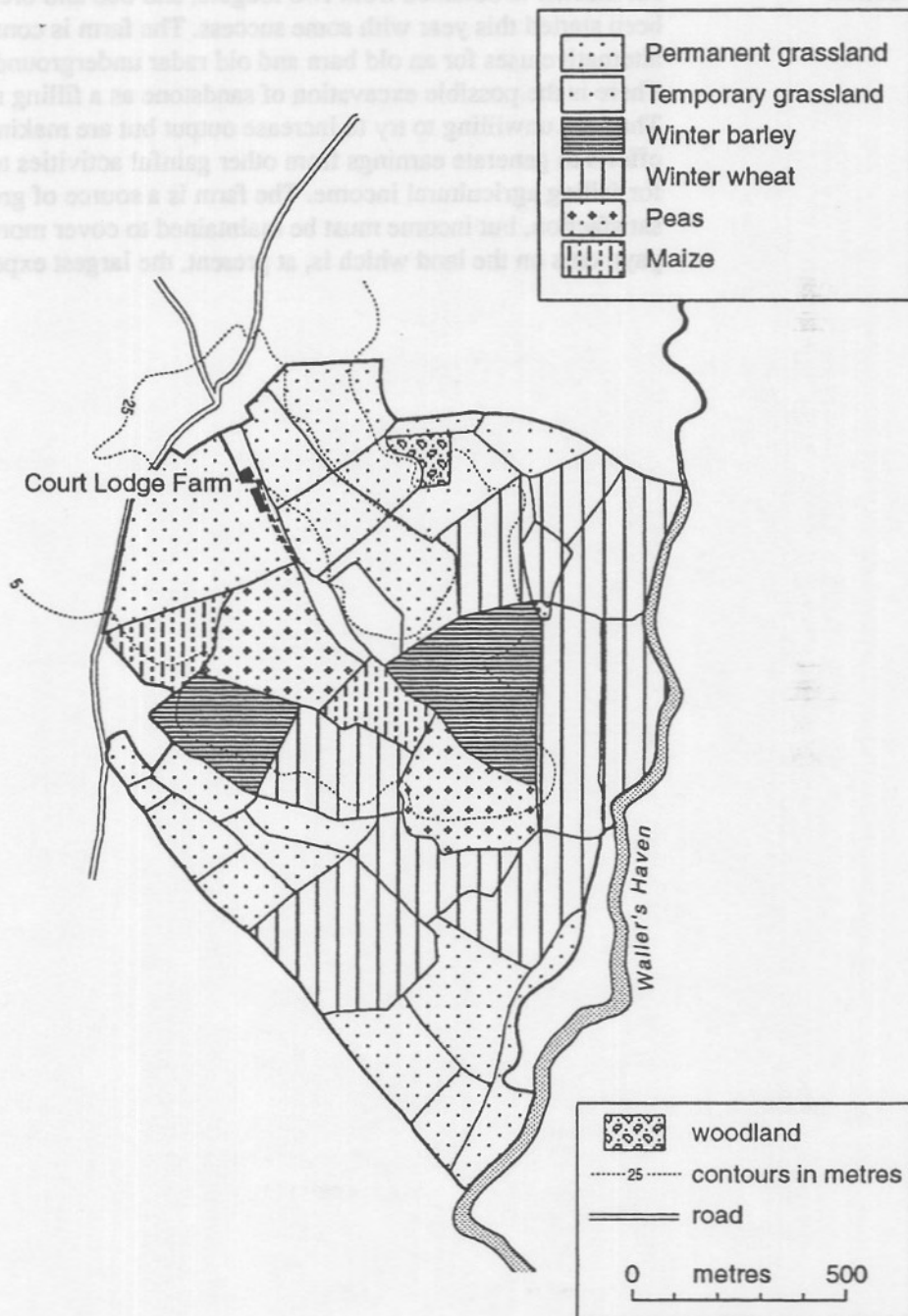
Conservation

The farmer's wife is a member of the local Farming and Wildlife Advisory Group and they have developed a heronry on a pond within the farm. The countryside stewardship scheme (see glossary) represents an important commitment.

Diversification

An income is obtained from two lodgers, and bed and breakfast has been started this year with some success. The farm is considering alternative uses for an old barn and old radar underground buildings. There is the possible excavation of sandstone as a filling material. They are unwilling to try to increase output but are making positive efforts to generate earnings from other gainful activities to compensate for falling agricultural income. The farm is a source of great satisfaction, but income must be maintained to cover mortgage payments on the land which is, at present, the largest expense.

Figure 8. Court Lodge Farm, Wartling, East Sussex



Swanborough Farm, Lewes, East Sussex

Type and Location	This is a mixed farm with cereals, beef cattle, and sheep enterprises. Most of the farm lies on the west slopes of the Ouse valley overlooking the brooklands. The alluvial floodplain, with improved drainage, is the most fertile land on the farm. The lower gentler slopes have light, deep, fertile soils, but the downland has thin, poor soils.	
Tenure	Owner occupied.	
Land Use	Arable	206.4 ha
	Permanent pasture	119.0 ha
	Temporary pasture	44.5 ha
	Woodland	2.4 ha
	Total	372.3 ha
Livestock	Currently 140 cows, 140 calves and 22 heifers. The cows are Hereford-Holstein cross and bulls are Charollais or Limousin. The dairy herd and milk quotas were sold in 1988. The sheep flock has been reduced from 500 in 1989 to 200. They are Border Leicester crossed with Blackface. The sheep are bought as lambs in Scotland, kept for a year and sold as breeding stock.	
Crops and Grass	Winter wheat	125.0 ha
	Malting barley	40.5 ha
	Oilseed rape	40.5 ha
	Half the wheat is grown for milling and half for stock feed. The barley is screened for malting barley and the rest is used for stock feed.	
Labour	The full-time work force has fallen from four to three since 1987. The farmer's wife is responsible for the office, and some seasonal labour is hired at harvest.	
Machinery and Farm Buildings	Six tractors and a combine which is leased. The former dairy has been converted (see Diversification).	
Chemicals	The chemicals used on the farm include nitrogen, potash and phosphate fertiliser. There has been a reduction in the amount of nitrogen fertilizer used.	
Conservation	The farmer believes that too much emphasis is placed on the destructiveness of farming and it is in the farmer's own interest to look after the land. He is involved in a woodland scheme and in the upkeep of paths and fences, which is expensive.	
Diversification	The major change on this farm involved the switch from dairying and the introduction of sheep in 1985. Consequently, the old dairy has	

Normans Nurseries, Littlehampton, West Sussex

Type and Location	This is a horticultural enterprise specialising in chrysanthemums. The nurseries are located in the northern outskirts of Littlehampton on the West Sussex Coastal Plain. The soils are alluvial silts, which have a good structure and drainage properties. The site benefits from its south coast location, with long hours of sunshine which are crucial to the enterprise.
Tenure	Owner occupied.
Land Use	The enterprise uses 3.24 ha of land, of which half is under glass. Of the covered area one quarter is for pot plant production, the remainder for propagating and producing cut flowers.
Main Enterprise	The sole enterprise is the growing of chrysanthemums, either as cut flowers or as pot plants. The average weekly output is 1,500 single blooms, 7,000 wraps consisting of five stems each, 1,500 chrysanthemum plants in 9 cm pots, and 3,300 plants in larger 14 cm pots. Plants in these pots take from 10 to 12 weeks to mature from being planted as cuttings, all of which are bought in from a supplier. The use of artificial light improves the quality of the pot plants but not the cut flowers.
Labour	There are eight full-time and eight part-time workers. Two seasonal workers are employed in the summer.
Machinery and Farm Buildings	There are a variety of glass houses, a large coal silo, three boiler houses (both coal and oil are used), and storage and packing sheds.
Chemicals	Two soil analyses are carried out each year, and base fertilizer is applied in accordance with the results. However, liquid feed is applied subsequently during the growing period of the crop to provide additional nutrients. The cuttings are rooted in peat blocks which, after use, are broken up and rotavated into the soil. Pesticides and fungicides are used to control pests such as leaf miners, aphids, caterpillars, thrips, and diseases such as botrytis (mould). Steam soil sterilisation is used.
Main Costs	The major cost for this enterprise is labour, due to the intensive labour inputs demanded by horticultural activities. In addition, fuel costs are very significant, though the ability to switch between coal and oil helps. Other costs include the purchase of the cuttings, the delivery costs to customers (which is now done by contractors), fumigation, and the space fogger for insecticidal fog. Maintenance and repairs to glasshouses and boilers are other occasional costs. Staff training and the provision of protective clothing and masks whilst using chemicals

is another cost. Advice from ADAS, which was free, now has to be paid for.

Long Term Issues

There is concern about future markets because of competition from the Dutch, who have cheaper gas, capital, and greater government support; and also the emergence of new areas of supply such as Turkey and Zimbabwe. The direct sales business decreased in 1987, and the recession, which began in 1988, has been marked by changes in demand, e.g. funerals with no flowers, and weddings with artificial silk flowers. There is a lack of effective sales cooperation amongst growers, and, as there are more points of outlet and supply, management is more difficult. There has been over-production in the flower market, further depressing prices. The property suffered damage in the 1987 hurricane. The storm destroyed several other businesses in the area. Plants are always liable to diseases, and the spread of Western Flower Thrip in 1987-88 was harmful and difficult to control.

South Park Farm, Forest Row, East Sussex

Type and Location	This is a dairy farm comprising 81 ha of inherently infertile land on hilly country at the edge of Ashdown Forest. It includes several areas of woodland. The land is largely unsuited to crop production although maize for animal fodder is cultivated (Figure 9).	
Tenure	Owner occupied and part tenant.	
Land Use	Long term leys	47.7 ha
	Maize	12.9 ha
	<u>Woodland and park</u>	<u>20.2 ha</u>
	Total	80.8 ha
	24.3 ha of summer pasture land are also rented.	
Livestock	The dairy herd in 1991 was made up of 130 Holstein-Friesian cross dairy cows, 43 heifers in calf and 28 calves. The herd is fed one third brewers grains, one third silage and one third whole crop maize in winter. The maize area will be substantially increased in the immediate future. Additional bought-in concentrate is fed in the milking parlour as and when necessary. Since milk quotas were introduced in 1984, additional quota amounting to the value of £45,000 was immediately purchased, and will have to be boosted by an extra £30,000 in 1992. This is vital for future income, milk being the only enterprise capable of achieving adequate returns in an area unsuitable for cropping. Almost all cows and heifers are programmed to calve in September with a few during October, and as a result, milk production is at its height during this period. A higher price could be obtained if cows were to calve in July/August, but the very heavy work-load involved interferes with school holidays and other activities.	
Crops and Grass	Apart from long leys, the land is used for grass silage and recently for maize, a new variety of which is easy to harvest. The maize content in the feed improves the protein content in the milk, resulting in better quality. Grass is cut two or three times a year, the first cut in the third week in May produces 1,000 tonnes, which is about 50 per cent of the total. The silage is clamped rather than baled, and constitutes the vast proportion of feed used on the farm.	
Labour	The farm has a labour force of four. The farmer and his son manage the farm in partnership. The farmer's wife deals with the accounts and most of the office work, and rears the calves. One man is employed full-time. Some seasonal labour is needed for grass silage harvesting, which is done in a syndicate with two other farms. A second-year student is sometimes employed. The extra wage is more than justified provided a suitable and keen applicant is found.	

**Machinery and
Farm Buildings**

Two four-wheel drive tractors have been acquired. All operations, except grass and maize harvesting, are carried out by farm labour. Various improvements have been made to the dairy parlour, cubicles and to silage pits which have adequate capacity. The milking parlour is an 8:16 herringbone. This is highly mechanised with memory operated feeders, and milking units which are detached automatically after the cow is milked.

Chemicals

Nitrogen is applied between March and July, as this reduces leaching into streams. Phosphates and potash are applied when necessary, and lime is applied approximately every four years.

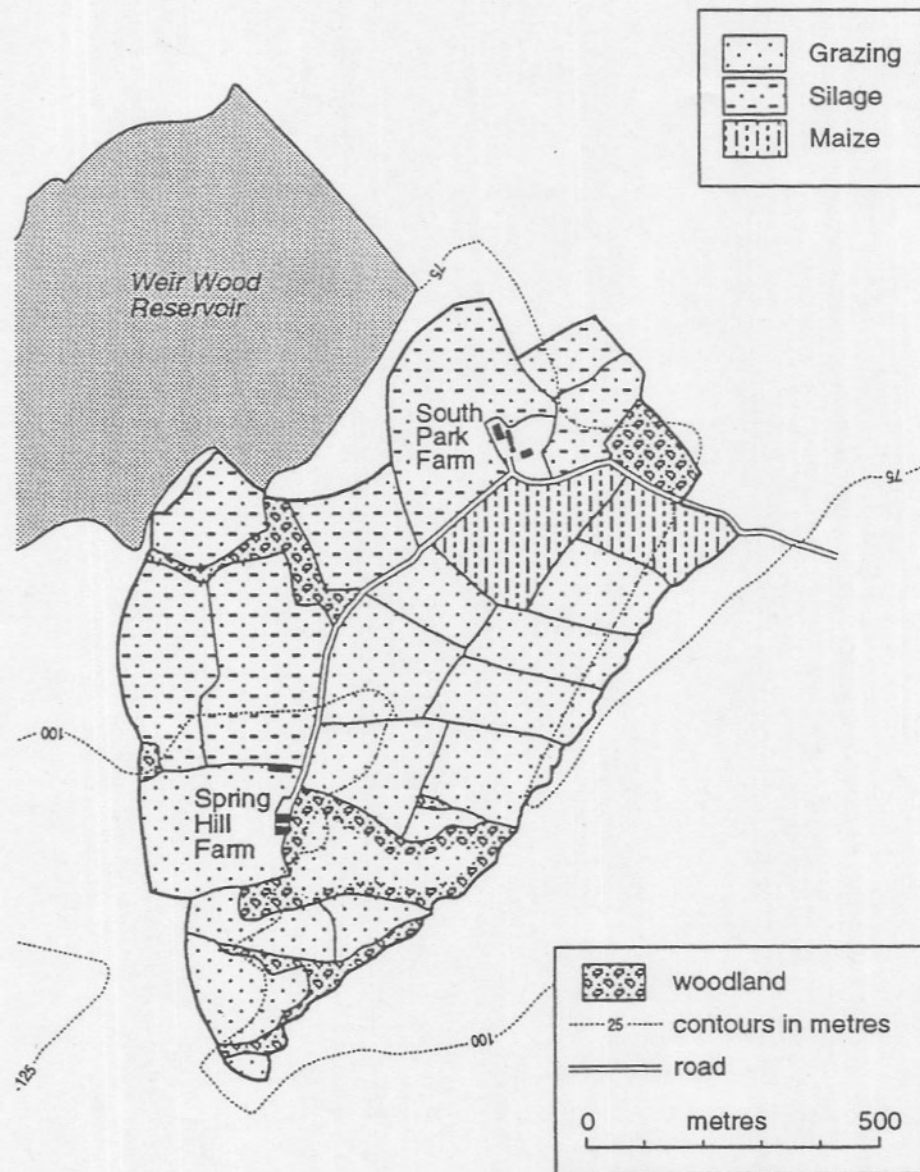
Conservation

Conservation issues are important on the farm, and inseparable from good farming practice. The farm contains a fair amount of woodland but this is not a source of income. The public are always encouraged to use footpaths through the farm.

Diversification

The farm is an intensive and economically run dairy enterprise, and in spite of quota limitations there are no plans to diversify. The only other enterprise on the farm is land let for wintering sheep. In general the owners are not optimistic about the future of farming. Reduced amounts of quota will certainly make it more difficult and costly to purchase, and they are critical of some EC policies. In this area many farms have been split up and are occupied by persons not wholly reliant on farm income, and who are often not sympathetic to traditional practices. The enormous sums of capital involved, and meagre returns, now make it almost impossible and certainly unattractive, for young people to enter the industry.

Figure 9. South Park Farm, Forest Row, East Sussex



Silveroaks Farm, Waldron, East Sussex

Type and Location	Silveroaks Farm is in the High Weald on the Ashdown Sands. The soil is reasonably well drained, but hungry and needs fertiliser. The present occupant has farmed here for 22 years. Originally the farm was devoted to poultry, but has since been converted primarily to a pig enterprise.	
Tenure	Owner occupied.	
Land Use	Arable: wheat and barley	38.5 ha
	Buildings, woodland, etc.	2.0 ha
	Total	40.5 ha
Livestock	The main enterprise consists of 450 sows. These are bought as gilts, and the breed used is Camborough. All the pigs are raised for pork. About 20 sows farrow each week and an average of 12 young are obtained from each litter. The young are reared for 17 weeks and are then sold at 68 kilos live weight. Sales total about £11,000 per annum. The business has grown gradually in the last 10 years and now has double the number of sows. It was previously engaged in selling store pigs. Two-thirds of the pigs are sold through a broker. Prices fluctuate quite markedly. About 140 tonnes of feed is purchased monthly, mainly cereals and soya.	
Labour	The farm employs four full-time workers and one part-time. This is a family business as both wife and son are full-time workers. Contractors are used for muck spreading and hedge cutting.	
Machinery and Farm Buildings	Most of the buildings have been purpose-built for pig production. Fifty per cent of the pigs are on deep straw litter, housed in steel apron type buildings with natural ventilation. The remainder are in specialist buildings equipped for farrowing and early weaning. These buildings have a controlled environment. Equipment in the buildings is constantly being upgraded.	
Chemicals	A top dressing is used on the corn if required. Very little artificial fertilizer is needed to supplement the farmyard manure from the pigs. Chemicals for cleansing and disinfectanting are used after pressure washing of buildings. Fly spray is also used.	
Comments	The country is virtually self-sufficient in pork meat. The reunification of Germany in 1990 resulted in large quantities of pig meat coming from former East Germany into Europe, where prices were higher. This caused an over-supply of the market and a resultant fall in prices. Apparently, these imports resulted in the slaughter of 50 per cent of some national herds in Eastern Europe and there has since been a shortage on the continent. This has resulted in increased prices in the	

UK and some increase in exports. The outbreak of blue ear disease in 1991 has also caused a shortfall of five per cent in production, causing prices to rise. Pig producers have not been in receipt of support prices, and the market is a self-regulating one responding rapidly to change.

Diversification

This farm has no need to diversify, and would find it difficult to do so. The pig sector is very experienced in coping with the fluctuations in pricing. The present enterprise is very demanding and calls for efficient management. This has resulted in a profitable business and one which gives much job satisfaction.

Ridlington Farm, Duncton, West Sussex

Type and Location This is primarily an arable farm with a small beef enterprise. The soils range from coarse, free-draining sands to wetland on the Gault Clay.

Tenure Owner occupied.

Land Use	Permanent pasture	35.0 ha
	Temporary pasture	10.5 ha
	Woodland	8.1 ha
	<u>Arable</u>	<u>92.7 ha</u>
	Total	146.3 ha

Livestock The herd has 30 beef cattle of various breeds, including Hereford-Friesian crosses, Limousins and Charollais. These are usually bought locally and put on the more difficult, uneven pastures which are not possible to cut for hay. There are fewer beef cattle now as more of the hay is being sold for horses. The farm's own oats and barley are used as feed, plus an added protein supplement.

Crops and Grass	For the 1991-92 crop year:
	Winter wheat 32.7 ha
	Winter barley 12.5 ha
	Oats 10.9 ha
	Potatoes 6.5 ha
	Oilseed rape 6.9 ha
	Rye 16.1 ha
	<u>Rented out</u> <u>7.1 ha</u>
	Total 92.7 ha

Yields of wheat have reached eight tonnes per hectare, whereas in the 1960s yields were five tonnes per hectare. Improvements are due mainly to the increased use of fertilizers, and fungicides to combat disease. Potato yields were 37 tonnes per hectare in the 1960s and are now 55.5 tonnes per hectare. Over 90 per cent of the farm crops are sold, some, such as oats and rye, on secured contracts to Quaker Oats and Ryvita respectively. Rye does well on the poor sandy soils and rabbits leave it alone, so that it is planted in fields near woodlands. Some of the oats and barley are used for feed for the farm animals, and some is sold to neighbours. Peas used to be included in the rotation, but have been abandoned as they are no longer profitable.

Labour The farmer himself is the only full-time worker, but his wife, who teaches four days a week, helps with the farm accounts. Some casual labour is employed in holiday periods and exchange of labour operates with a neighbour.

Machinery and Farm Buildings	The enterprise is highly mechanised and includes a combine harvester, power harrow, fertilizer spreader, seed drill, baler and a sprayer. There are four tractors. Hedge trimming is done by contractors.
Chemicals	Large quantities of chemicals are used, but great care is taken in the timing of application and the conditions under which spraying is carried out. The farm takes over 1,000 tonnes of sewage sludge from Petworth, and the application of this on the sandy soil improves fertility and water retention.
Conservation	Conservation is equated with good farm management and the landscape of the area is seen as a product of such management policies. Woodland and hedges on the farm are well cared for.
Diversification	This was a dairy enterprise until 1984, when the dairy herd was sold and the farm changed to arable. The farmer cites the stringent regulations now in force which have increased costs, such as the controls on slurry storage, and the National Rivers Authority conditions on slurry lagoon siting. Pasture is rented for horses and some farm buildings are now used for stabling. Sales of hay have increased markedly. Contractors' equipment is serviced and housed on the farm. The variety of crops grown has increased, and plans are being made to introduce a new variety of short-stemmed sunflowers which should also be easy to combine.
Comments	It is felt that the set-aside scheme is inadequate and the farmer would prefer a joint scheme of quotas, set-aside and nitrogen limitation. Farming ten years ago was a profitable business, but now even the efficient farmer is in difficulties. A further fall in prices, as foreshadowed by changes in the CAP regulations, could force a number of farmers out of business. Also of concern is that more farmers are being forced out of dairying by the high costs imposed as a result of stringent controls on pollution by water authorities.

Dower House Farm, Blackboys, East Sussex

Type and Location	This is a specialist beef suckler enterprise situated on the southern edge of the High Weald. The farmer was originally a veterinary surgeon and farmed this holding on a part-time basis until 1968 when he became full-time on the farm. The farm was part of a much larger enterprise which has now been reorganised into smaller units.	
Tenure	Owner occupied.	
Land Use	Permanent pasture	40.5 ha
	Woodland	20.2 ha
	<u>Rented land</u>	<u>7.3 ha</u>
	Total	68.0 ha
Livestock	60 beef suckler cows, including 30 pure bred Sussex, and the rest mainly Friesian-Hereford cross cows all crossed with a Charollais bull.	
Labour	Two full-time equivalent workers.	
Machinery and Farm Buildings	As a result of the farm reorganisation, many of the farm buildings are no longer used for their original farm purpose. (details under Diversification)	
Conservation	The farmer is a firm believer in the promotion of conservation and access. He thinks they are acceptable alternatives to present production methods as long as the government is willing to pay for the time and money invested. The EC funded set-aside scheme is not working as intended, although being pushed by the government. It is failing in its objective to control production, and is detrimental to the countryside resulting in a poor public image. The ESA scheme is a better scheme, but needs more financial incentives. It keeps land in use, as it is a form of extensification. Labour is still required to manage the land and production could be increased at short notice if so required. A nitrogen quota scheme would also be a satisfactory alternative. The new countryside stewardship scheme, which targets specific habitat enhancement and provision of public access, should be expanded to include permanent pastures and woodland.	
Diversification	Since 1987 the farm has been reorganised. In the 1970s there were two herds of dairy cattle, but in 1981 prior to quotas being introduced, the dairying enterprise was given up and replaced by arable. This arable enterprise has now been taken over by other members of the family as separate units. However, the farmer believes that quotas have been the salvation of the dairy industry as milk production is the only viable way of converting grass to money. Neither beef nor sheep are viable enterprises now. A number of businesses have been established in the	

former farm buildings, some of which have been refurbished and adapted for their new roles. These include traditional manorial buildings which are inappropriate to modern farming and which are listed buildings. These have been converted to craft workshops, so finding a practical alternative use for the buildings, but not for the land. Businesses include printing, furniture making and picture framing. Former farm cottages are now available for holiday letting, and there are stables, paddocks and other horse-riding facilities. It should be noted that these new enterprises are no longer part of Dower House Farm, but make use of redundant farm buildings and provide employment for over 50 people.

Windmill Hill Farm, Ticehurst, East Sussex

Type and Location Windmill Farm is a specialist fruit farm located on the High Weald. The soils are derived from the Tonbridge Wells Sands and Wadhurst Clay. Rainfall averages 875 mm per annum, and excess winter rainfall on the heavy soils is damaging to plants. The farm lies close to the Bewl Bridge reservoir.

Tenure Owner occupied. The present owner has worked this holding for the past 38 years. In 1963 it was one of the first farms to start 'pick-your-own' (PYO).

Land Use

Fruit growing	34.2 ha
Fallow	5.2 ha
Total	39.4 ha

The farm is divided into two lots of land, there being 22.5 ha at the Windmill Farm site and a further 16.9 ha a short distance from the farm.

Crops and Grass In June 1991 the following crops were under cultivation:

Strawberries	2.2 ha
Gooseberries	0.1 ha
Raspberries	1.0 ha
Blackcurrants	21.0 ha
Redcurrants, tayberries, loganberries	0.6 ha
Morello cherries	0.2 ha
Plums various varieties	3.8 ha
Apples various varieties	4.5 ha
Cob nuts	0.8 ha

The seasonal work on the farm involves the pruning of apples, maintenance and, during January to March, the erection of support systems for cane fruits etc. Applications of fertilizers and herbicides to maintain weed-free conditions, vital for growing, is an on-going operation, but mainly during February to April. Soil preparation and planting of strawberries may take place in April or September. Pruning of plums and cherries occurs in May when the sap is running. Spraying for pest and disease control is an on-going operation throughout spring and summer. June to October are harvest months, open to the public for PYO, and marketing through other channels. October to December may involve the grubbing out of old orchards or plantations and their replacement with new stock. The life of each plantation or orchard is governed by its economic performance, determined by disease, climate, policies or public whim. Major costs are those of spray chemicals, fertilizers, nursery stock, labour and machinery. The blackcurrants are all grown on a contract agreement.

Labour	There are two full-time workers and seasonal labour is taken on in the harvest season, June to October.
Machinery and Farm Buildings	Tractors are used for mowing and spraying. There is some specialist irrigation equipment. Machines are also used for picking fruit such as blackcurrants. There is a large barn with cold storage facilities.
Chemicals	Spraying is of great importance and the farmer is concerned about the latest controls and prohibitions on some useful chemicals used for weed control, which are classed as persistent. He finds the public ill-informed on the question of the use of chemicals in farming. The recent COSHH (Control of Substances Hazardous to Health) regulations are costly to implement. Irrigation is sometimes needed, but water is from the mains and is very costly. In general, droughts have not been a serious problem due to the moisture-retaining soils.
Conservation	The farmer believes in good farming practices which result in the care of the land. His farm provides a good habitat for nesting birds, butterflies and bees.
Diversification	No scope for diversification. Government policies are a source of concern, but the owner would be more worried by the establishment of another successful PYO enterprise in the near neighbourhood. There have been opportunities to expand but it has been policy to keep the enterprise manageable as a family business. The future of PYO is thought to be reasonably secure. A combination of poor summers and local competition would be of concern. The CAP has little bearing on the enterprise, and although there are intervention prices for some fruit, this has never been used.

Chalder Farm, Sidlesham, West Sussex

Type and Location	Chalder Farm is a mixed dairy and arable farm with a specialist rose-growing unit (Figure 10). The farm lies on the West Sussex Coastal Plain. About half the land is old brookland, which is wet and unploughable, but the other half is good arable land. The brookland is given over to permanent pasture which is grazed by the dairy herd.	
Tenure	The farm is rented from the Church Commissioners.	
Land Use	Permanent pasture	99.1 ha
	Winter wheat	72.8 ha
	Maize	12.1 ha
	Spring oil seed rape	22.2 ha
	Roses	16.2 ha
	Woodland, etc.	4.0 ha
	Total	226.4 ha
Livestock	In 1987 the dairy herd had grown to 480, with 250 replacement heifers kept on rented land on the Weald. Since that time there has been a major reorganisation into two herds. On the one hand there is a reduced milking herd of 200 Holsteins, with 100 replacement heifers producing about 1.5 million litres per annum. The reduction in herd size has meant that up to 1 million litres of quota have been leased out on an annual basis. This has provided capital for the new dairy enterprise. This began in 1988 with the purchase of American Holstein embryos of High Genetic Merit. The embryos are selected from the top two per cent of American cows, and the initial cost of purchase is very high. The value of these high genetic animals is two or three times that of ordinary stock. It is intended to create a niche market for the sale of a small number of 'super cows'. The MOET (Multiple Ovulation Embryo Transfer) system of super ovulation is in use, resulting in up to eight calves being produced. These are implanted into heifers giving a 60 per cent pregnancy rate. The first offspring are now two and a half years old, have calved and are milking. By 1994 it is hoped to have replaced the existing herd entirely with the high genetic cows, and to be producing some 2 million litres of milk. In addition, a number of pedigree heifers will be available for sale. The average herd yield in the UK is about 6,000 litres, but the heifers are now yielding 9,000 litres over the 305 days lactation, and it is expected that the yield will increase to between 10 and 11,000 litres. For the past four years about 1,200 sheep have been kept from October to January.	
Crops and Grass	Most of the crops are grown for sale. The maize is used as silage, and follows the rose crop in rotation. Most of the wheat is milling wheat and is harvested early, often in the first weeks of August. Roses	

represent a very special enterprise. The initial stock of 700,000 one-year old seedlings (briars) come from Holland or Denmark. They are budded by a contractor and sold under contract. Roses are lifted in November and December. They grow well on the rich soil and the muck from the herd. It is likely that this enterprise will be reduced in the foreseeable future. Until recently daffodils were grown on the farm, but the soil is very cloddy and caused extra work in the lifting and drying of the bulbs.

Labour

A considerable amount of work is done by contract such as silage making, hedge cutting, ditch digging and clearing, square baling and combining. Labour has decreased over the years from ten full-time workers in 1987 to eight fulltime workers. In addition there are three full-time family workers. About 20 part-time workers are taken on to bud and lift roses mostly in summer.

Machinery and Farm Buildings

Ten tractors and a specialised lifting machine for roses. A new dairy unit was opened in 1991, which includes a closed circuit television linked to the house enabling a close watch to be kept on cows when calving.

Chemicals

The main fertiliser used on the farm is muck from the cows. It is rich in phosphates and potash, and limits the fertiliser bill considerably. The roses are given additional inorganic nitrogen and potash. A growth regulator is put on the wheat in spring, and two fungicides against rust and mildew are applied. Wheat is sprayed with weedkiller to prevent blackgrass and wild oats. The roses are sprayed against aphids, and the root stock is given fungicide protection against rust and mildew.

Conservation

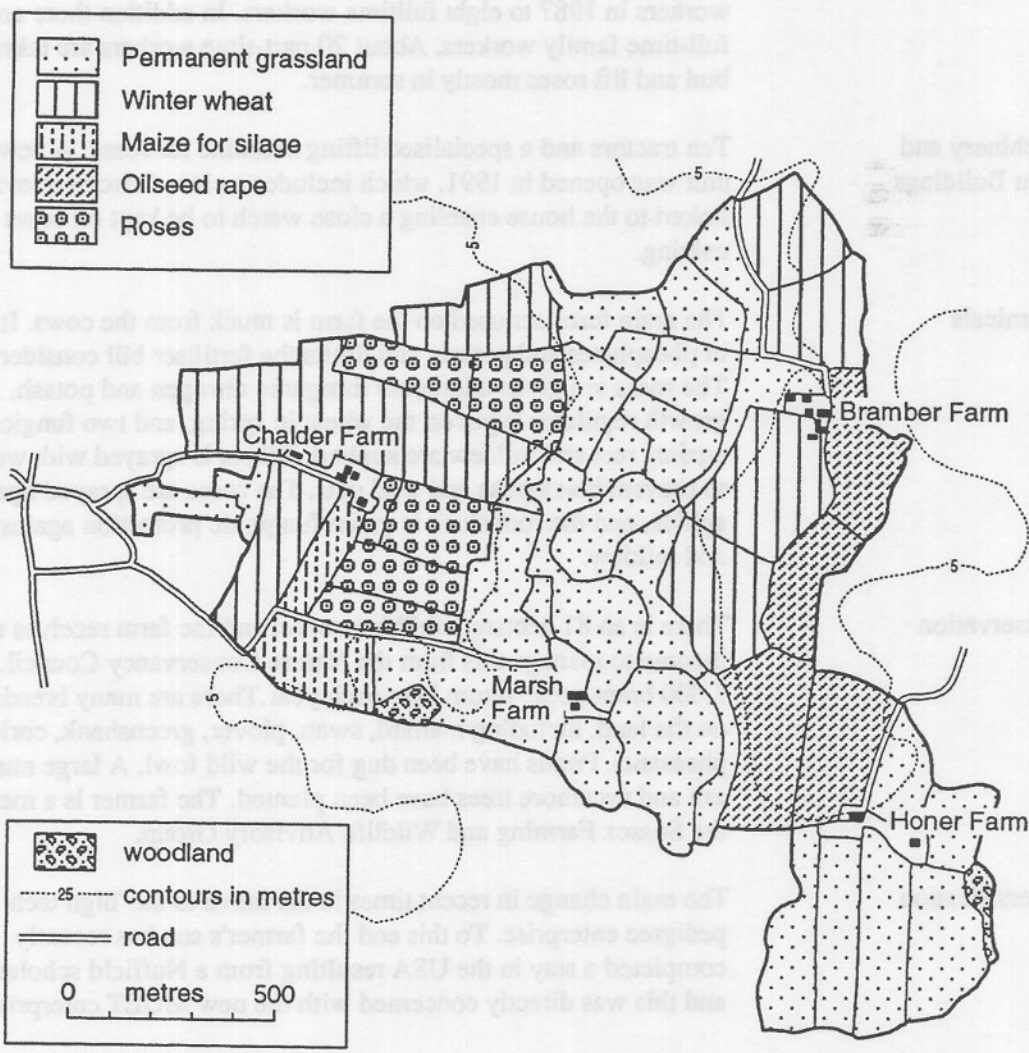
There is an 81 hectare wildlife reserve, and the farm receives an income to manage this from the Nature Conservancy Council. About 3,000 brent geese return here each year. There are many breeding birds on the land, including mallard, swan, plover, greenshank, curlew, and pheasants. Ponds have been dug for the wild fowl. A large number of ash and sycamore trees have been planted. The farmer is a member of the Sussex Farming and Wildlife Advisory Group.

Diversification

The main change in recent times is the move to the 'high tech' pedigree enterprise. To this end the farmer's son has recently completed a stay in the USA resulting from a Nuffield scholarship, and this was directly concerned with the new MOET enterprise.

represent a very special enterprise. The initial stock of 700,000 one-year old seedlings (burs) come from Holland or Germany. They are planted by a contractor and sold under contract. Roses are lifted in November and December. They grow well on the rich soil and the moisture from the head. It is likely that the enterprise will be reduced in the foreseeable future. Until recently daffodils were grown on the farm, but the soil is very cloddy and caused extra work in the lifting and drying of the bulbs.

Figure 10. Chalder Farm, Sidlesham, West Sussex



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GLOSSARY

AGRICULTURAL DEVELOPMENT AND ADVISORY SERVICE (ADAS)

ADAS is the professional, scientific and technical service of the Ministry of Agriculture Fisheries and Food (MAFF). It provides a comprehensive, impartial service to the agricultural industry to meet the demands for innovation, technology and advice. Since March 1987 services that benefit the industry have been provided on a priced basis, negotiated according to the nature of the services needed and the benefits received.

AIR POLLUTION

Odour nuisance from livestock units and other farming activities is governed by the Environment Protection Act. It is intended that, from 1993 onwards, the burning of agricultural crop residues will be banned. Guidance on straw and stubble burning is contained in a National Farmers Union *Straw Burning Code*.

CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH, 1988 REGULATIONS

Farmwork may involve exposure to many substances which can be hazardous to health. Safety in the use of pesticides extends not only to protecting the user but also the need to safeguard the environment.

COUNTRYSIDE STEWARDSHIP SCHEME

The scheme launched by the Countryside Commission in 1991, is a major national initiative aimed at encouraging farmers and landowners to undertake positive conservation management of the following landscape types: chalk and limestone grasslands, heathlands, river valley landscapes, the coast and uplands. Target areas in Sussex include the coast around Rye Harbour, Ashdown Forest and the valleys of the Adur, Arun, Cuckmere, Ouse and Rother.

ENVIRONMENTALLY SENSITIVE AREAS (ESA)

The purpose of this scheme is to conserve and, where possible, enhance the landscape and wildlife interest in areas where it is vulnerable to changes in farming practices. Farmers within the boundaries of an ESA are invited to enter into five year agreements with the Ministry under which they will receive standard rates of payment to farm in a way that will benefit the environment. Since 1987, 19 areas in the UK have been designated as ESAs, and uptake has been encouraging with agreements and applications covering more than 230,000 hectares of land being received in the first three years of the scheme. Most of the South Downs has been declared an ESA in an attempt to try to halt or reverse some of the environmentally damaging side effects of mechanisation, grassland improvement, and the increasing dominance of arable cultivation.

EXTENSIFICATION SCHEMES

Pilot schemes for beef cattle and for sheep were begun in 1990, offering compensation to farmers who reduce their beef output or the number of sheep on their holding by at least 20 per cent and maintain this reduction over a five year period. The schemes should lead to less intensive use of land on participating farms and environmental gains by, for example, reduced use of pesticides and fertilizers.

FARM AND CONSERVATION GRANT SCHEME (F&CGS)

Introduced in February 1989 and aimed at improving the structure of agriculture in the European Community. The F&CGS is designed to help farmers maintain efficient farming systems whilst also meeting the often heavy cost of combating pollution and conserving the countryside and its wildlife.

FARM DIVERSIFICATION GRANT SCHEME (FDGS)

This scheme offers a comprehensive package of assistance to farmers thinking of diversifying into non-agricultural profit-making activities on their farm. It provides grants towards the cost of expert advice in planning the new business. The types of enterprise eligible for grant under the scheme are good quality on-farm holiday accommodation, processing of farm produce and timber, craft manufacture, farm machinery repair, farm shops, pick-your-own, sport and recreation, educational and amenity facilities, livery and the provision of horses and ponies for hire.

FARM WOODLAND SCHEME

The scheme started in 1988 and will pay farmers for taking some of their land out of agricultural production and planting it with trees. The scheme is designed primarily to attract arable land and improved grassland out of production, and contains incentives for the planting of predominantly broadleaved woodlands. Planting is permitted up to a limit of 40 hectares per holding.

MILK QUOTAS

Since 1984, milk production in the European Community has been regulated by quotas. Individual producers who make deliveries or sales of milk or milk products are subject to the quota arrangements. If an individual exceeds his quota he could be liable for a supplementary levy currently at 100 per cent of the target price for milk for wholesale deliveries or 75 per cent of the target price for direct sales.

SET-ASIDE SCHEME

Set-aside is a voluntary scheme introduced in the UK in 1988, designed to provide farmers with an alternative to the production of surplus arable crops, whilst creating good wildlife habitats, amenity areas, and maintaining environmental features such as hedges, trees, ditches, ponds and watercourses on or adjacent to land set-aside. Some farmers may be able to use the rotational fallow option in a planned conversion to organic food production. There are three options for the use of set-aside land:

- a) It may be set-aside to fallow on a permanent or rotational basis, in which case it must be kept in good agricultural condition and environmentally attractive.
- b) It may be put to a non-agricultural use, for example for recreation, tourism or sports, or for game or nature reserves.
- c) It may be used for woodland under the Farm Woodland Scheme.

For the three years 1988-90, Sussex had a total of 178 applications for set-aside involving a total of 5,769.28 hectares.

SHARE FARMING

This is a joint enterprise between a party with an interest in the land and another party involved in farming operations. In essence, it is an agreement between the participants to farm a given land area, with one party providing the capital, the other the farm management and inputs such as labour, machinery etc.

SITES OF SPECIAL SCIENTIFIC INTEREST (SSSIs)

The Nature Conservancy Council has a duty to identify sites in the countryside which it considers to be of special interest because of the flora, fauna, or geological and physiographical features. One good example is Ebernoe Common in West Sussex.

STATE VETERINARY SERVICE (SVS)

The service is responsible for the control and eradication of notifiable diseases, national disease control programmes, investigation of new diseases, meat hygiene, animal welfare, the import and export of animals and animal products, and the liaison with private veterinary surgeons on livestock disease and production programmes.

WATER POLLUTION: FARM WASTE

The Water Act 1989 makes it an offence to cause or knowingly permit a discharge of poisonous, noxious or polluting matter or solid matter to any controlled water. Enforcement of this regulation is the responsibility of the National Rivers Authority (NRA). Controls are also in force to ensure that silage, slurry and fuel oil installations are of an adequate standard. The Ministry has produced a code of good agricultural practice which gives advice to farmers on ways to reduce the risks of water pollution, including guidance on optimal fertilizer applications and the proper storage and disposal of farm wastes.

WATER POLLUTION: NITRATES

Agricultural practices are a major cause of high nitrate concentrations in water and it is reasonable to look to agriculture to contribute to a solution to the problem. A leaflet entitled *Nitrates and Water* was issued in 1987, giving guidance to farmers on how they can reduce nitrate leaching by following good agricultural practice. A pilot Nitrate scheme covering around 14,500 hectares and 197 farmers in 10 Nitrate Sensitive Areas is now operating.

APPENDIX

Sussex Agricultural Data

	WHEAT (ha)			BARLEY (ha)			POTATOES (ha)		
	EAST	WEST	TOTAL	EAST	WEST	TOTAL	EAST	WEST	TOTAL
1964	7860	10571	18431	18116	21835	39951	736	1086	1822
1965	9728	13538	23266	18861	21663	40524	705	1022	1727
1966	8720	13476	22196	22701	24728	47429	596	993	1589
1967	8471	14482	22953	23486	22972	46458	580	1141	1721
1968	8294	13519	21813	23259	22579	45838	595	1182	1777
1969	7945	13024	20969	22792	20841	43633	513	1071	1584
1970	9274	14526	23800	21249	19247	40496	593	1224	1817
1971	10412	16031	26443	21126	18878	40004	585	1374	1959
1972	9689	15507	25196	21932	19691	41623	585	1341	1926
1973	9302	14830	24132	21819	20005	41824	555	1314	1869
1974	9274	18245	27519	17228	21559	38787	490	1355	1845
1975	6536	13995	20531	18387	23174	41561	505	1386	1891
1976	8560	17333	25893	15973	19499	35472	566	1463	2029
1977	7221	13299	20520	17968	23257	41225	636	1558	2194
1978	10106	17948	28054	16648	21028	37676	573	1401	1974
1979	11409	20846	32255	17222	19817	37039	568	1362	1930
1980	12156	21472	33628	16792	19481	36273	568	1365	1933
1981	13006	23671	36677	16234	19306	35540	513	1177	1690
1982	13964	23639	37603	15979	18333	34312	509	1144	1653
1983	14918	24916	39834	14253	17159	31412	493	1115	1608
1984	17067	27657	44724	12639	15366	28005	465	1088	1553
1985	16185	26307	42492	12780	15444	28224	418	1105	1523
1986	16573	27872	44445	12357	15355	27712	391	1063	1454
1987	16950	27212	44162	11772	14832	26604	382	1076	1458
1988	14923	26381	41304	13086	14330	27416	351	1077	1428
1989	15837	26701	42538	10341	11975	22316	311	1025	1336

	DAIRY CATTLE (nos)			SHEEP (nos)			PIGS (nos)		
	EAST	WEST	TOTAL	EAST	WEST	TOTAL	EAST	WEST	TOTAL
1964	47406	34533	81939	211906	75008	286914	72867	58163	131030
1965	47017	33992	81009	215442	73235	288677	77528	64412	141940
1966	46554	34174	80728	230466	75070	305536	75461	55130	130591
1967	49515	35882	85397	221149	67267	288416	72202	52906	125108
1968	49288	36800	86088	215609	57380	272989	71062	54210	125272
1969	49669	37217	86886	213662	46413	260075	74991	55997	130988
1970	49197	37563	86760	204420	39963	244383	79941	59206	139147
1971	48096	37757	85853	202358	39406	241764	83142	65422	148564
1972	48451	37427	85878	201057	41227	242284	79687	64953	144640
1973	48392	38319	86711	208470	43684	252154	81071	66830	147901
1974	38793	43511	82304	201091	54504	255595	63129	80686	143815
1975	35641	42961	78602	197986	58949	256935	55037	63585	118622
1976	35234	42253	77487	197004	57517	254521	54058	60437	114495
1977	34206	42160	76366	203707	59960	263667	53158	59685	112843
1978	34558	42986	77544	221495	68207	289702	50188	52627	102815
1979	34109	43068	77177	225934	79059	304993	46066	56474	102540
1980	33186	42571	75757	240149	79865	320014	45365	54395	99760
1981	28022	35344	63366	262067	89788	351855	46052	61719	107771
1982	28508	36072	64580	275969	92987	368956	45603	63925	109528
1983	29148	36139	65287	284256	104011	388267	45326	67775	113101
1984	28480	34498	62978	298543	114206	412749	37178	59389	96567
1985	26137	33980	60117	295665	118455	414120	38199	52004	90203
1986	26619	33490	60109	315019	124392	439411	38067	57457	95524
1987	23293	31449	54742	314346	136620	450966	38913	54588	93501
1988	22235	29772	52007	333071	142430	475501	35426	44960	80386
1989	20700	26703	47403	342658	151346	494004	34373	32579	66952

APPENDIX

	MILK PRODUCERS			MILK SALES :mill litres			TOTAL LABOUR FORCE		
	EAST	WEST	TOTAL	EAST	WEST	TOTAL	EAST	WEST	TOTAL
1980	451	295	746	165	149	315			
1981	407	270	677	160	144	304	7180	11024	18204
1982	390	258	648	172	155	327	6952	11003	17955
1983	382	255	637	169	152	320	6967	10652	17619
1984	373	250	623	154	139	293	7023	10554	17577
1985	351	245	596	152	142	295	7067	10777	17844
1986	339	236	575	150	141	291	7031	10535	17566
1987	323	226	549	138	128	266	6870	9699	16569
1988	303	203	506	132	121	254	6803	9705	16508
1989	279	198	477	130	118	248	6604	9704	16308
1990	264	183	447	127	114	242			

Source: June Agricultural and Horticultural Census

June 1980			June 1981			June 1982		
EAST	WEST	TOTAL	EAST	WEST	TOTAL	EAST	WEST	TOTAL
451	295	746	407	270	677	390	258	648
382	255	637	373	250	623	351	245	596
339	236	575	323	226	549	303	203	506
279	198	477	264	183	447			