

# LAND USE AND FARMING IN SUFFOLK ABOUT 1840

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## INTRODUCTION

THE TITHE SURVEYS of the mid-19th century provide a unique body of evidence for reconstructing the pattern of land use and farming at this critical period in the history of English agriculture. Their use was pioneered by E. C. Willatts, H. C. K. Henderson and others engaged on the Land Utilisation Survey of Great Britain in the 1930s. One can now count more than forty regional-scale as well as several hundred local studies which have used tithe survey data.<sup>1</sup> In addition, information on crop acreages and yields from reports on tithe agreements preserved in parish tithe files has been used to reconstruct elements of mid-19th-century farming and in particular to test the hypothesis which suggests that agricultural practices, as reflected in rotations and yields, were relatively advanced on the light soils of England, while clay-land agriculture was still a backward sector *c.* 1840.<sup>2</sup> Suffolk provides an excellent further testing ground for this idea as there are data in the tithe files for almost 70 per cent of parishes and clearly differentiated heavy and light soil regions.

This paper forms part of a national project financed by the Social Science Research Council to map all the agricultural statistics from the tithe files. First of all the Suffolk tithe files are briefly introduced as a source and some salient elements of the physical environment of agriculture at mid-century — notably the pattern of soils — are examined. Then, with the aid of some computer-produced maps, an examination is made of the pattern of land uses, notably arable, grass, woodland and common and the distribution of crops grown on the arable.<sup>3</sup> Finally, separate consideration is given to farming on the heavy and light soils. For reasons of space only a limited selection of maps is presented to illustrate this account. The text is based mainly on comments recorded by assistant tithe commissioners in their reports; no material from other primary sources has been incorporated. The study is thus avowedly cross-sectional in character and is concerned more with the landscape of farming than with processes of farmers' decision-making. Nonetheless, it is suggested that the study of distribution patterns, for which purpose the tithe surveys provide an ideal source, can help to identify explanatory factors.

### *The Suffolk Tithe Files*

Very few parishes in Suffolk were completely free of tithes at the time of the Tithe Commutation Act of 1836. The high ratio of commutation agreements to compulsory awards (more than 2:1) is well above the national average and confirms that both the Church and lay tithe owners on the one hand, and tithe-paying landowners on the other, were eager to come to a settlement under the terms of the Act. Appendix I shows that a large proportion of agreements were entered into soon after the Act was passed in 1836 (70 per cent of agreements were made by 1840). Tithe commutation appears to have proceeded both quickly and amicably in Suffolk.

There are 355 tithe files which contain assistant commissioners' reports on agreements, in the form of completed 'questionnaires', representing one for each place where agreement for commutation was reached. Of these, some 269 cover at least 90 per cent of a parish and enumerate all categories of land. Only these have entered the cartographic analysis (Fig. 26). Suffolk is among those counties with best coverage of reports and, therefore, maps of land use and crop data compiled from them give a fairly complete picture of the state of agriculture in the county *c.* 1840.<sup>4</sup> The value of the Suffolk files in this respect is further enhanced by the fact that all the reports are of the 'arable' type employed by the Tithe Commission in the eastern counties of England and described in full by Cox and Dittmer.<sup>5</sup> To enable the assistant commissioners and

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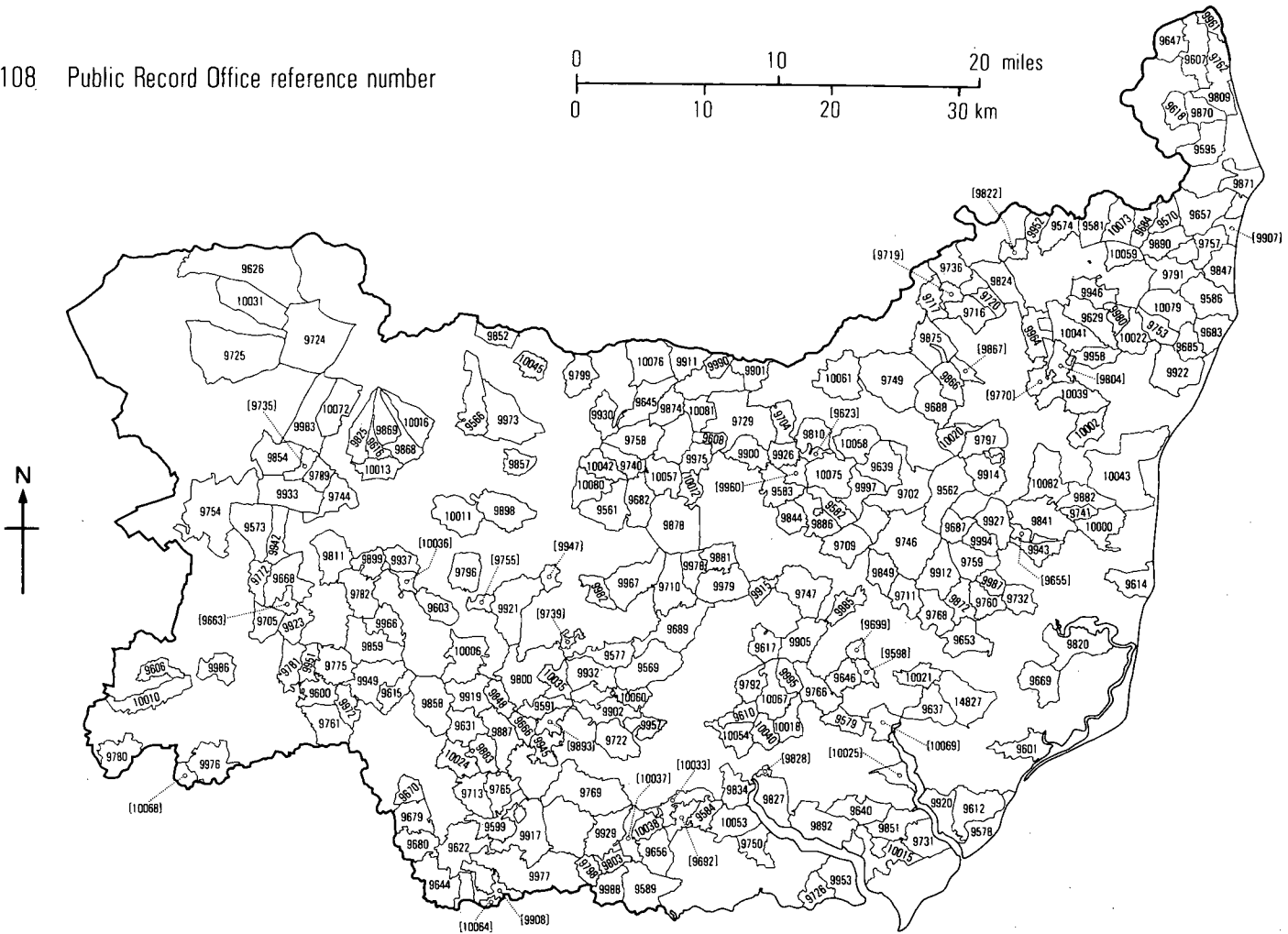
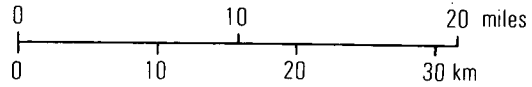


Fig. 26 -- Boundaries of tide districts with extant data. Compiled by Rodney Fry from the Tide Index edition of the Old Series Ordnance Survey one-inch maps and from tide maps (P.R.O., I.R. 30).

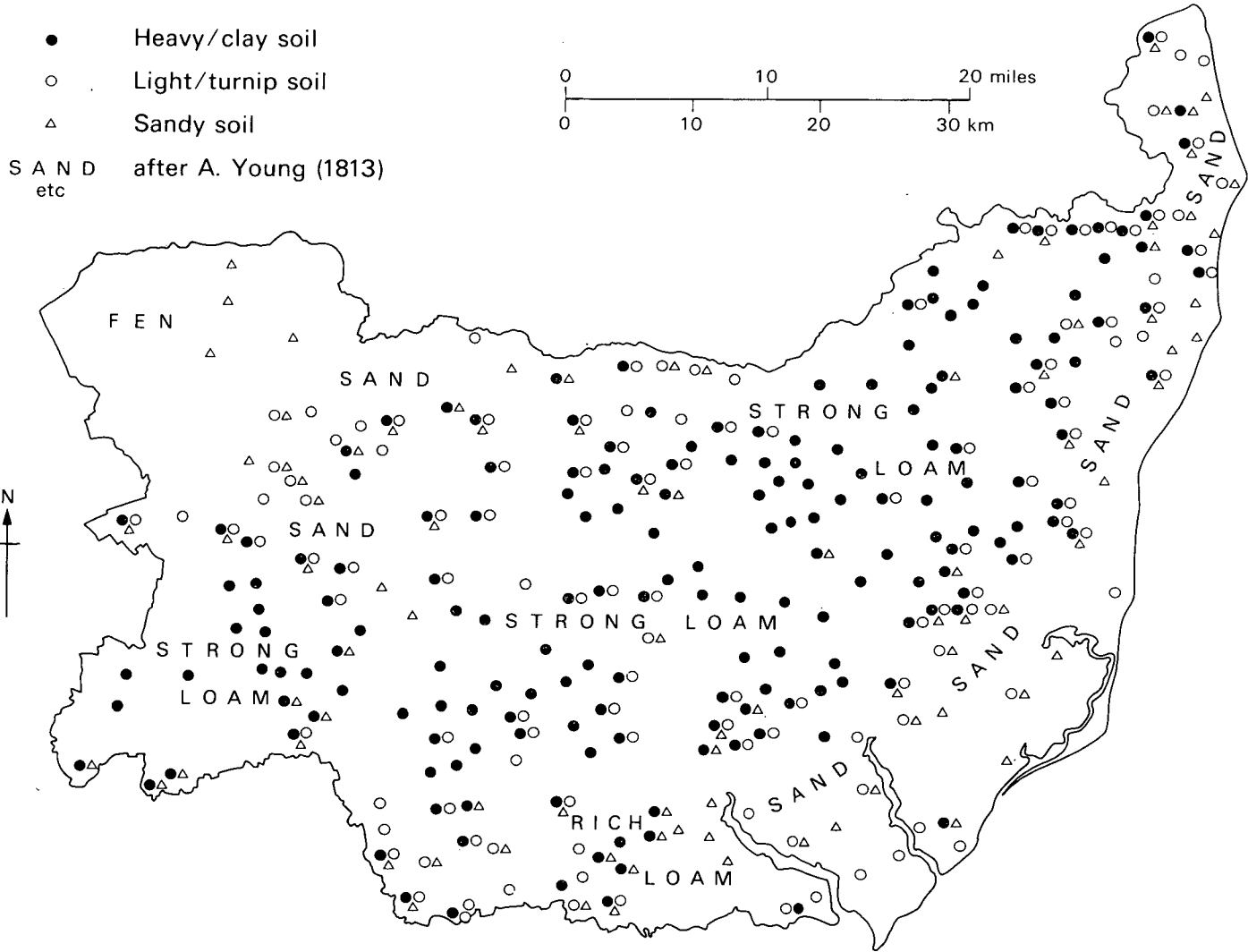


FIG. 27 — The soils of Suffolk. The boundaries are those of Arthur Young while the symbols derive from soil descriptions noted by assistant tithe commissioners in their reports on agreements.

local agents to make a fair valuation, they were required to set out on the questionnaire estimates of the acreages of various land uses, crops and their yields. These data are presented in such a form that they can be abstracted directly without the need for the complicated arithmetical manipulations that are necessary when abstracting data from the 'pastoral' type questionnaires of western counties.<sup>6</sup> The total acreage of the parish is usually clearly stated, together with the acreage of any tithe free land, waste or roads. This provides an immediate check on the proportion of the parish which was titheable and, therefore, of the degree to which the data is potentially representative.

In addition to abstracting crop and land use data from the questionnaires, the content of all the tithe files has been indexed by subjects and places.<sup>7</sup> Many minutes of award meetings and accompanying papers contain details of agriculture which, taken together with descriptions of neighbouring parishes given in the agreement reports, can help fill out the picture of agriculture at this time.

With 'arable type' reports there are fewer general problems of accuracy than with data from 'pastoral type' reports. Land use acreages given in the questionnaires correspond with those stated in the schedules to the tithe apportionments. Assistant commissioners usually derived crop acreages by dividing the total arable acreage by the number of courses in the normally adopted rotation. Only rarely were acreages derived from a precise survey of the crops grown in that year. Some generalisation of acreages inevitably results. Crop yields were regularly noted in the reports and also appear to have been somewhat generalised. In some parishes the yields recorded may have been rather less than were actually obtained under any high farming system practised at the time. At West Stow in 1837 T. S. Woolley, an assistant commissioner, wrote,

In making my calculations I have taken an average of crops on the Arable Land, not taking the actual produce as now cultivated — but such as I think could be relied upon with ordinary Farms. The present produce would probably be much greater.<sup>8</sup>

Most of the assistant commissioners who worked in Suffolk (see Appendix I) were also employed in Norfolk and so were well aware of the agricultural improvements that were taking place in eastern England. Instances of high farming rarely escaped their notice. Henry Gunning worked extensively in East Anglia and the parish descriptions which he wrote are particularly full and informative.

#### *The Physical Environment of Suffolk Farming*

Arthur Young included a map of soils in his *General View of the Agriculture of the County of Suffolk* (1813). He divided the county into five soil regions; two areas of sandy soil, a very small extent of fen on the Cambridgeshire border, a small area of rich loam, and finally a strong loam occupying the entire centre of the county (Fig. 27). This last region is greater in extent than all the others put together. Hugh Raynbird, in his Royal Agricultural Society of England prize essay, estimated that 'there are about 46,000 acres of rich loam, 80,000 acres of marsh and fen land, 450,000 acres of heavy loam or clay, 250,000 of sand of various qualities'.<sup>9</sup>

James Caird also commented on the variety of Suffolk soils.<sup>10</sup> In most tithe files with reports on agreements, the nature of the soil is one of the first things to be described, together with the difficulties or potentials that it presented to farmers. At Sotherton J. M. Mathew wrote,

The parish of Sotherton consists of a stiff, heavy clay soil which requires considerable expense in cultivation owing to the necessity of ploughing the fallows 2 or 3 times over to make it ready for the reception of seeds.<sup>11</sup>

At Risby, the soil presented a completely different set of problems:

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The soil is sandy and blowing; not capable of producing the useful artificial grass called sainfoin; which requires a certain degree of closeness, such as light chalks etc.<sup>12</sup>

Evidence from the assistant commissioners' reports supports the classification of Suffolk soils given by Young and later by Raynbird. In many ways the picture of soil types provided by the tithe files is more refined, since in many parishes, not only those on the border of two of Young's soil types, a number of different soils are recorded. At Kessingland, a parish in the eastern sandy district, J. D. Merest recorded that the northern end of the parish, formerly common land, 'is of heavy tenacious, thin skinned soil, upon a clay and very difficult of tillage', while 'across the centre to the sea on the Eastern side the land is of good mixed quality' and 'the South is rather lighter but still good Turnip and Barley land except a few hills at the South Eastern corner which are scalding'.<sup>13</sup> The presence of some variability of soil provided flexibility for agricultural management and this was recognised by assistant commissioners when making their valuations.

## LAND USE IN SUFFOLK CIRCA 1840

### *Arable*

Since the assistant commissioners were provided with 'arable type' report forms in Suffolk parishes, it might be expected that the cultivation of crops was more important than livestock breeding. This expectation is given some support by the map of arable land in the county (Fig. 28) and by Appendix II. Fig. 28 reveals that at least 85 per cent of Suffolk parishes with extant

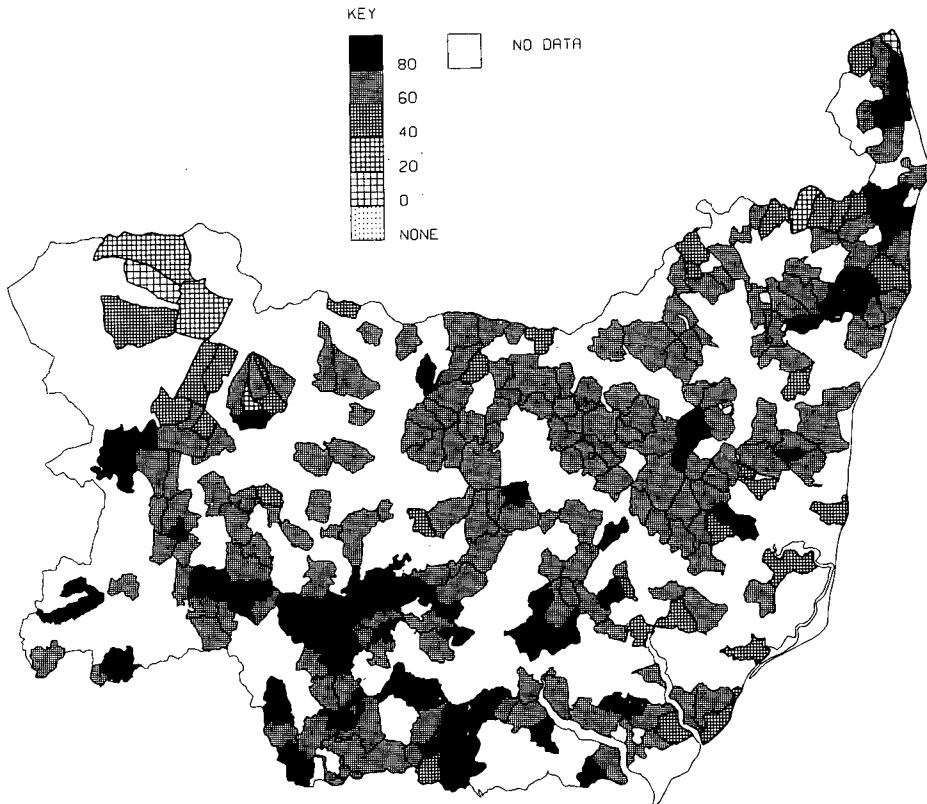


FIG. 28 — Arable land in Suffolk c. 1840.

tithe file data had more than 60 per cent of their land under the plough; in all but a very few parishes the ratio of arable to pasture was greater than 1.4:1. The only area with significantly less arable was Breckland where the parishes of Wangford, Brandon and Elvedon all had less than 40 per cent of their lands under crops. Generally, though, there was no great contrast between the extent of arable land on heavy and light soils in Suffolk. Although on turnip soils the proportion of arable was consistently very high, only one parish had less than 60 per cent arable, none of the heavy soil parishes had less than 40 per cent arable and in the Lavenham district there were places where arable occupied over 80 per cent of parish area. The range of values of arable on the Sandlings is very similar to that on the heavy soils. In respect then of the broad category of arable land, there were no great differences in quantity between light and heavy soils in the county at mid-century.

*Meadow and Pasture*

The map of meadow and pasture (Fig. 29) indicates the relative unimportance in quantitative terms of grassland in most parts of Suffolk. Only 9 per cent of parishes had more than one-third of their area under permanent meadow or pasture. The only two areas where permanent grassland formed a significant feature in the landscape were in the north-east of the county in parishes along the river Waveney where there were extensive marshes, and in Breckland where there were rough sheep pastures. As with arable, there was not a great difference between the

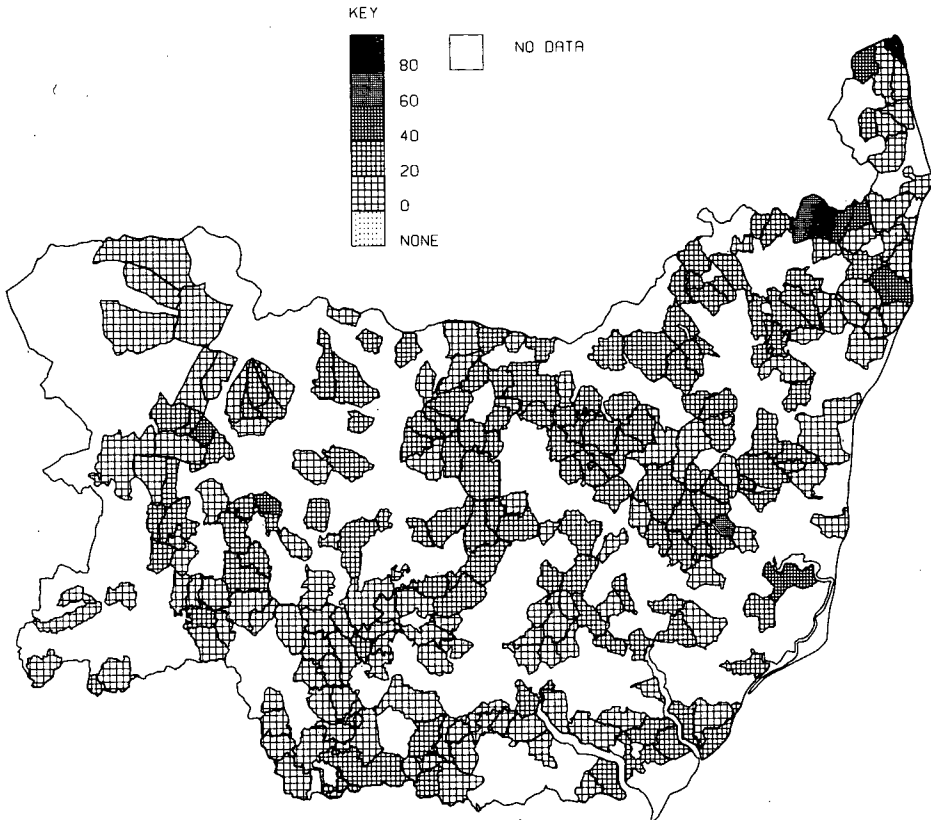


FIG. 29 — Meadow and pasture in Suffolk c. 1840.

amount of meadow and pasture land on the light soil of the Sandlings, the turnip soils to the south of Ipswich, and the heavy lands. However, meadow and pasture in heavy land parishes was not considered as productive of tithe as that on the lighter soils, although from the tithe files it is difficult to judge whether this was because of their natural qualities or just because they were neglected.<sup>14</sup> Comments by assistant commissioners suggest that often both factors were responsible. At Hasketon, H. B. Gunning wrote,

The natural grasslands are not of the best description: As is in general the case they are neglected for the arable lands; and indeed they will not yield anything like an equal return for what is laid out upon them.<sup>15</sup>

At Somerton F. Browne Browne commented that

the arable land seems to be more attended to than the meadow and pasture which must necessarily be impoverished by the general practice of reserving the manure of the farmyard for the wheat.<sup>16</sup>

In some heavy land parishes pastures were being permanently improved by underdraining with tiles but much still remained to be done.

In the eastern part of the county there were two main descriptions of pasture land: poor heathy pasture on the lighter 'upland' soils and more extensive marshland along the coast and rivers. Heath pasture, often partly gorse, was of little value and was grazed mainly by sheep. The marshes were more useful since they enabled farmers to keep a greater number of sheep and bullocks. These animals could be grazed on the marshes during summer and autumn; they were particularly useful in hot seasons when herbage on upland pastures was scanty.<sup>17</sup> Saltings were also occasionally grazed by sheep.

Enclosed permanent pasture occupied only a small extent of the Breckland, but there were extensive open heath lands on which large numbers of sheep were grazed.<sup>18</sup> Occasionally permanent pasture was broken up and a crop of oats taken before it was seeded down with rye grass. Few cows were kept in this part of Suffolk and apart from sheep, rabbits and deer seem to have been the only other types of managed livestock.<sup>19</sup>

### *Unfarmed Land*

Unfarmed land, i.e. woodland, common and waste, occupied but a very small proportion of most Suffolk parishes. Only 5 per cent of the parishes with reports on tithe agreements had woodland occupying more than 10 per cent of their area. It should be noted, though, that mature timber trees were usually exempt from tithe payment and so not always enumerated. Nor was common land extensive by mid-century. Only 6 per cent of the parishes studied had common occupying more than 10 per cent of total area and 78 per cent had no common recorded at all.<sup>20</sup> Very little common was enumerated in the files of heavy land parishes. Generally it amounted to little more than the village greens, as at Parham where H. B. Gunning commented that 'the common, about twenty acres, consists of what are known by the name of *greens*, there are several of these upon which the poorer classes turn their donkeys and geese.'<sup>21</sup>

On the lighter soils, commons were usually larger, although much heathland in the Sandlings, for example, had been reclaimed and brought into cultivation. In the northern part of the Sandlings this had been largely accomplished by enclosure awards in the early 19th century. Elizabeth Burrell notes that north of Southwold very little heathland remained by 1840.<sup>22</sup> Raynbird recorded that many sheep walks and rabbit warrens in the western sand district had been ploughed since Arthur Young's time.<sup>23</sup> However, in about 1840, this part of Suffolk still had the highest proportions of common land.

DISTRIBUTION OF ARABLE CROPS

*Corn Crops*

Wheat was the grain most extensively sown in Suffolk. It averaged 24 per cent of arable land in those parishes with tithe file data. Barley was almost as important, averaging 23 per cent of arable land, but oats were little grown in the county, averaging less than 2 per cent of the arable acreage (see Appendix III). A little rye was also grown instead of wheat, mainly in parishes with light, sandy soils. It was generally used for sheep-feed in place of turnips.<sup>24</sup>

The extensive employment of the Norfolk four-course rotation is shown by the extent of arable land occupied by wheat and barley. The map of wheat (Fig. 30) reveals that no parish had more than one-third arable in wheat (which could have suggested that the old three-course was still used) and that the modal class (the category in which most cases fall) was between 25 and 32 per cent. The clay lands of Suffolk were traditionally important for the production of wheat and at Linstead Magna H. B. Gunning wrote that 'Great Linstead forms part of a district which consists of what are called capital corn parishes being all heavy land'.<sup>25</sup> Certainly very few heavy land parishes had less than 20 per cent of arable down to wheat. On the turnip soils of south-east Suffolk the extent of wheat cultivation was consistently 25 per cent of arable and on the Sandlings there were only a few parishes where little wheat was grown.<sup>26</sup> The Breckland was the only part of the county where significantly less wheat than the average was grown; in several Breckland parishes no wheat was produced at all. At Lackford, William Heard wrote,

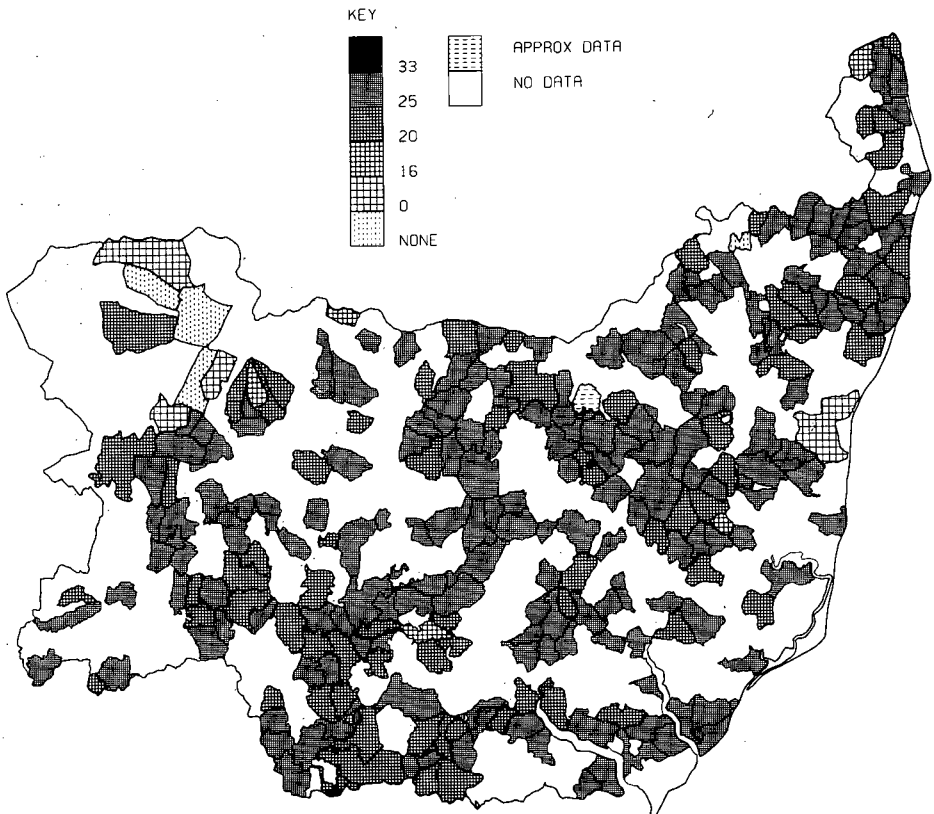


FIG. 30 — Wheat as a percentage of arable in Suffolk c. 1840.



All the centre of the parish consists of a light, blowing sand of weak character having been originally heath and waste. The latter portion of the parish is seldom cropped with wheat, rye as a substitute being better adapted to such thin land and is considered a more sure crop.<sup>27</sup>

Wheat yields varied rather more than the distribution of the crop (Fig. 31). As might be expected, there were very low wheat yields in the Breckland, some parishes produced less than 16 bushels per acre and most less than 24 bushels. The highest yields were obtained in the central, eastern and northern clay-land parishes where at two places yields of 32 bushels and more are recorded and with most of the rest in the category 24 – 31 bushels per acre. On the southern and western fringes of the heavy soil area, wheat yields were generally lower, around 16 – 23 bushels per acre, and similar yields were recorded in most Sandling parishes.

The distribution of barley was in many ways similar to that of wheat. No parish had more than 33 per cent of arable down to barley, only small amounts were grown in central Breckland parishes, while the modal class was 25 - 32 per cent of the arable. In some clay-land parishes barley occupied less than 16 per cent of the arable and there was also less barley than wheat grown in some Sandling parishes. In many of these places oats were substituted for barley. The pattern of barley yields is similar to that of wheat yield. Again, yields were very low in the Brecklands, less than 24 bushels per acre. The highest yields were obtained in the clayland parishes, a number of which produced over 40 bushels per acre. On the turnip soils and Sandlings, yields were lower, generally between 24 and 39 bushels per acre.

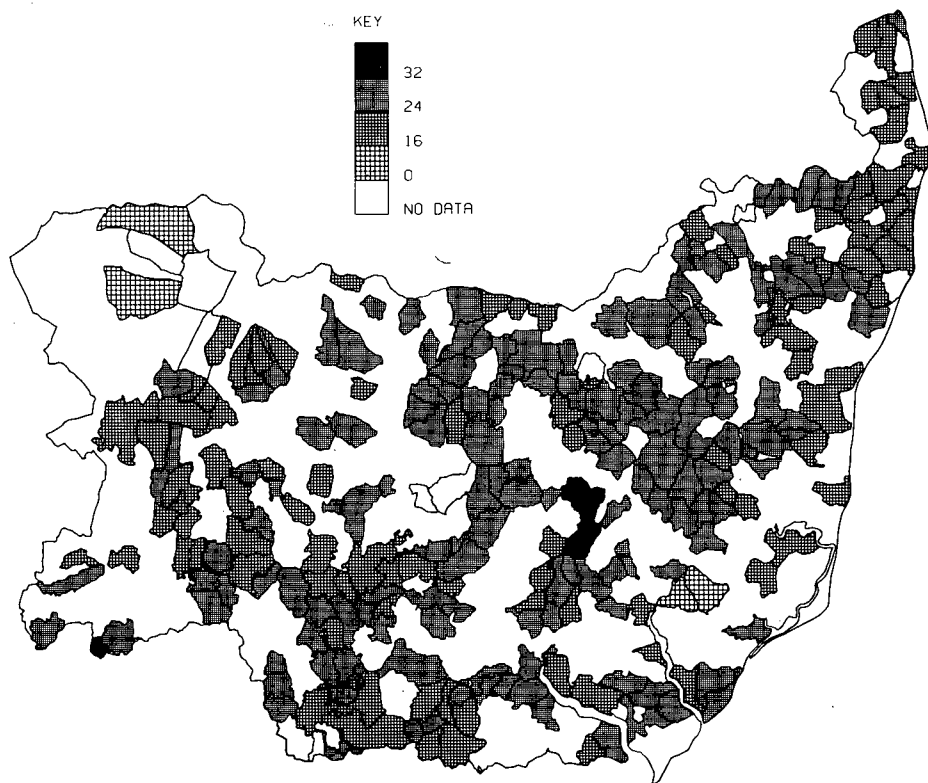


FIG. 31 — Yield of wheat in bushels per acre in Suffolk c. 1840.

Very few oats were grown in Suffolk. They were mainly grown in parishes where no other crop was successful. Consequently, their cultivation was concentrated in the Breckland parishes and at a few places in the Sandlings where the soil was very poor. On the clay and turnip soils oats rarely occupied more than 15 per cent of the arable land and in many parishes were not recorded at all. Yields of oats seem to have been higher on the clay lands than on the light soils. Over 40 bushels per acre were recorded in many heavy land parishes and nowhere was less than 24 bushels recorded.

*Pulse Crops*

Pulses were commonly an integral part of the agricultural system on the heavy soils. They were often sown when artificial grasses failed or as a substitute for red clover once in eight years. On heavy soils, beans were usual, on the lighter lands, peas were normally grown. In parishes with turnip and sandy soils, the cultivation of pulses was unimportant; in at least half none was grown at all.

*Clover and Seeds*

In central Breckland artificial grasses and green crops were, in terms of acreage, important arable crop in many parishes. Several had more than one-third of their arable down to seeds. Rye grass was common and coleseed and sainfoin were being tried in some parishes, but the latter did better on chalky soils. Large acreages of seed crops were also grown on turnip soils and in the Sandlings (20 to 32 per cent of arable land). In a few parishes — for example Westleton — a five-

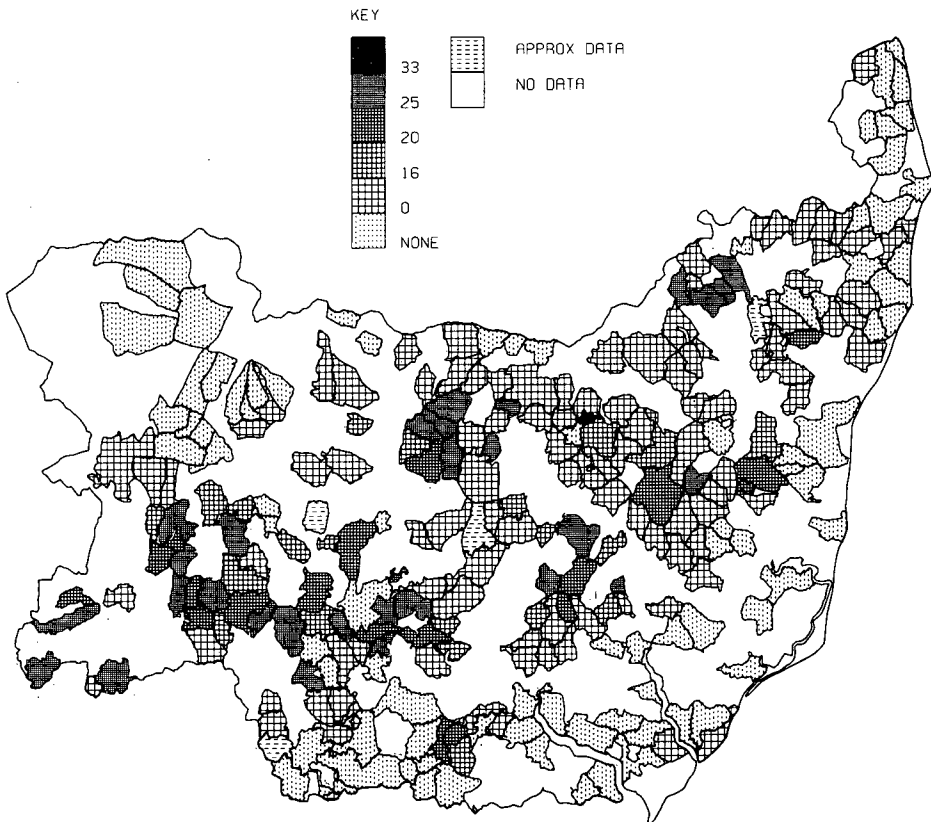


FIG. 32 — Bare fallow as a percentage of arable in Suffolk c. 1840.

course rotation with two years of seeds was used. In very many heavy soil parishes, seeds occupied less than 20 per cent of the arable land. On these heavy soils red clover (a favourite fodder crop) was generally grown only once in eight years and pulses and artificial grasses were sown in the alternate course.<sup>28</sup> Red clover was not successful on heavy soils at more frequent intervals, hence the recourse to pulses. Trefoil, white clover, rye grass and, increasingly, tares were also grown instead of red clover and H. B. Gunning reported at Battsford that artificial grasses were considered a better preparation for wheat than pulses.<sup>29</sup> John Glyde also thought it better to grow tares than beans on the heavy soils.<sup>30</sup> Artificial grasses were also much in demand for animal fodder, either grazed by sheep or, in many heavy land parishes, cut for hay and fed to the fattening bullocks and farm horses.<sup>31</sup>

### Fallows

Evidence in the tithe files suggests that bare (summer) fallowing in Suffolk was decreasing. Fig. 32 shows that this practice was absent from all but the heavy land parishes by 1840. In the same way that the distribution of pulses complements that of artificial grasses, the map of roots (Fig. 33) can be compared with that of bare fallow. In parts of the county where the four-course rotation was being followed, one course would be made up of a bare or turnip fallow. Thus in the Sandlings, on the turnip soils and on the clay soils in the south of Suffolk where there was little or no bare fallowing, many parishes had roots on between 25 and 32 per cent of their arable. In the western part of the clay lands where bare fallowing still occupied a large proportion of the arable,

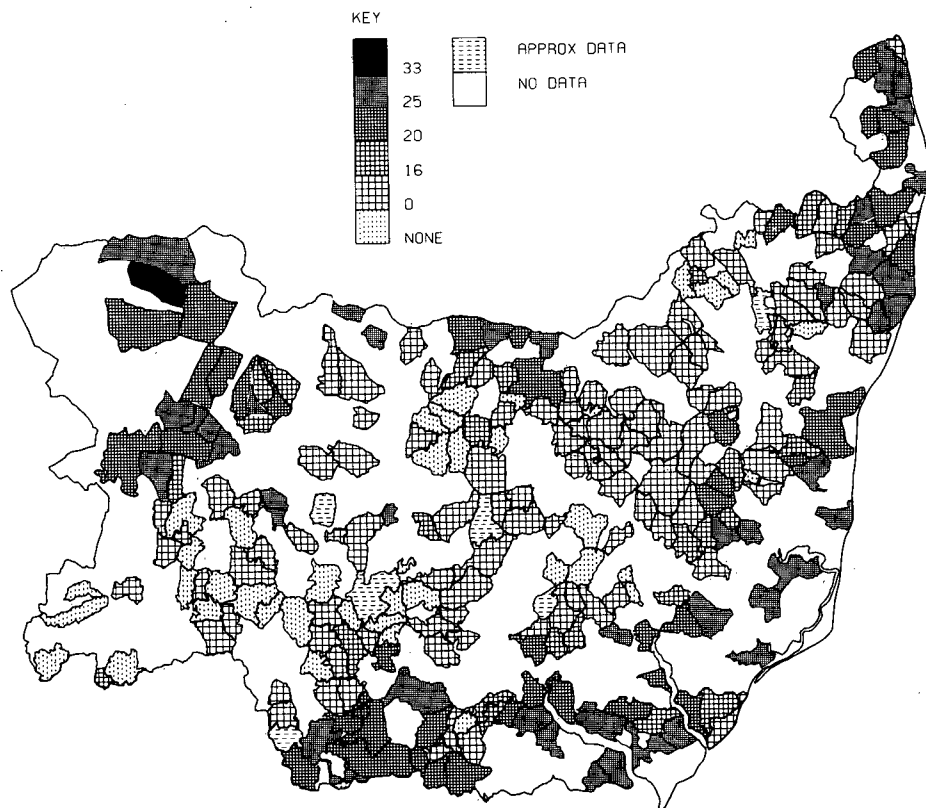


FIG. 33 — Turnips as a percentage of arable in Suffolk c. 1840.

there were places where no turnips were grown. In the central, north and north-east clay lands, bare fallow and turnips each accounted for less than 16 per cent of the arable. This relationship between bare fallow and turnip fallow does not hold for the Breckland where farmers did not follow the Norfolk four-course rotation. In central Breckland wheat and barley were unimportant and oats, seeds and turnips occupied a large proportion of the arable.

#### MANAGEMENT OF THE HEAVY AND LIGHT SOILS

##### *The Heavy Soil Sector*

The first stages in the improvement of agriculture on the heavy lands were largely complete by the 1840s. In virtually all parishes open fields had long been enclosed. Of all the parishes where tithe was commuted by agreement, only two — Barrow and Moulton — were recorded with open fields; here the three-field system was still practised, although at Moulton three-quarters of the fallow was sown with turnips and seeds in 1838.<sup>32</sup>

The four-course rotation was almost universal on the heavy soils by 1840. At Athelington, J. D. Merest reported that 'it is farmed upon the four course system generally followed in this county, and which is by far the best that can be adopted on this description of land.'<sup>33</sup> Many tenants were obliged by covenants in their leases to adopt the four-course rotation. At Milden, Horace Meteyard recorded:

Hitherto there has been on some farms no settled course of husbandry. But an extra crop was got from the land, when the farmer could obtain an additional portion of manure, or other favourable circumstances warranted such a system of agriculture. But the landowners were determined that the four course system shall in future be adopted.<sup>34</sup>

Other improvements in the cultivation of heavy lands had not been so universally adopted by 1840. Much depended on the capital the landlord was able and prepared to invest in his land.

In most parishes, heavy soils required draining before the acreage of crops such as turnips could be increased, so enabling larger numbers of sheep and cattle to be raised. H. B. Gunning described this process at Stoke Ash as follows:

Sheep appear to be increasing very much even in those parishes where not long since it was thought impossible to support them. As drainage improves, so does the cultivation of turnips, mangel wurzle and tares increase. Summer fallowing for barley is becoming less the practice here yearly. A large breadth of that very useful plant the vetch is grown here; these are partly mowed for the use of horses and partly fed on the ground by sheep.<sup>35</sup>

Similarly, at South Elmham All Saints, R. Kynaston envisaged an increase in the productivity of the heavy lands as a result of underdrainage.<sup>36</sup> However, despite the recognised importance of underdraining, there were a number of parishes where assistant commissioners remarked that the practice was much neglected.<sup>37</sup>

With the growing trend towards keeping more sheep and cattle for fattening, farmers in many of the heavy land parishes tried to raise more root and green crops than the land was really suited to producing. Often, as for example at Flixton, the land was not sufficiently well-drained for feeding in the fields and so roots had to be carried into yards for cattle and on to stubbles and pasture for sheep. Manure then had to be returned to the land for the succeeding barley crop.<sup>38</sup> Assistant commissioners and local agents considered this procedure detrimental to the barley crop, especially in wet seasons, and that barley yields were lower after a root crop than after bare fallow.<sup>39</sup>

The great increase in livestock numbers, mainly sheep and bullocks for fattening, is a subject of much comment in the tithe files. Gunning noted at Wickham Skeith that

The custom is extending here of fattening beasts upon oil cake, corn, hay and turnips; one of the most important improvements in Agriculture as far as regards the immense benefit which the manure so produced, is of to the land.<sup>40</sup>

But artificial feedstuffs do not seem to have been in general use in the heavy soil parishes at this time; thus, where the turnip crop was unreliable and the cost of oil cake and corn high, livestock numbers were limited.<sup>41</sup> A general practice was to buy in sheep to fatten according to the quantity of turnips and mangolds available.<sup>42</sup> At Little Stonham, Gunning neatly summed up the role of sheep in the heavy soil arable system:

Sheep are not regularly kept; they are subservient to the production of corn, and are purchased when there is food for them and sold again when no longer required for the purposes of consuming superfluous vegetation and manuring the land.<sup>43</sup>

As a result of the increase in numbers of livestock kept in many heavy soil parishes more manure was produced for the corn crops. Wheat benefited most, whilst barley was frequently deprived of its preparation of bare fallow. Little manure was used on the meadows and pastures.<sup>44</sup> In most heavy-land parishes little or no artificial manure was used and farmers relied solely on that produced by their animals, supplemented by town manure if it was available nearby.<sup>45</sup> Artificial manures appear to have been less used in Suffolk than in Norfolk at this time; cost and scarcity were the main reasons cited. In a few heavy soil parishes, farmers were beginning to use bone-dust and saltpetre for wheat and turnip crops, but they were still very much in a minority.<sup>46</sup>

Unfortunately, the tithe files do not provide comparative data on crop production before and after some of the improvements noted above, such as the introduction of fallow crops, increased numbers of livestock, and underdraining. However, comments made in the parish descriptions by assistant tithe commissioners, impressionistic as they are, recount with some consistency that though agriculture was progressing on the heavy lands and good corn yields were being obtained, the cultivation of these areas constituted a relatively backward sector compared with the light soil farming which is discussed below.<sup>47</sup>

### *The Light Soil Sector*

The light-soil parishes, especially those in east Suffolk, had several inherent advantages for arable farming. First the nature of the soils meant that they did not require the expensive process of underdrainage before root and green crops could be grown. Secondly, many parishes in east Suffolk were better situated for the purchase of artificial foods and manures. Thirdly, the marshes along the coast and rivers meant that stock could be kept on a more permanent basis and the amount of manure that could be produced for the corn crops was less dependent on the quantity of root crops available than was the case in heavy-land parishes.

Root crops were extensively grown on the light soils of east Suffolk. There was rarely any need to leave a bare fallow, but where a parish did contain some heavier soil it was very occasionally bare-fallowed, while turnips were grown on the lighter parts.<sup>48</sup> Whereas on heavy soils most roots had to be drawn for winter and spring feed, on the lighter soils turnips could be grazed by sheep.<sup>49</sup> Parishes near Ipswich and coastal ports such as Southwold and Woodbridge did not have to depend solely on their root crops and artificial grasses for the supply of animal feeds; artificial fertilisers could be bought in to supplement their manure. Artificial feeds and manures were increasingly being used, rather more so than on the heavy soils. At Reydon H. B. Gunning wrote,

There is a good deal of grazing here, by means of hay and corn and artificial food, which as well as manures are brought by water carriage to the adjoining parish of Southwold. Various artificial manures are now used; several kinds at present merely as experiments.<sup>50</sup>

Improvement was not much discussed in the Breckland files. In this part of Suffolk the four-course rotation could only be followed on the best lands, and these were generally in marginal parishes such as Ingham. Sheep farming was the most important agricultural pursuit and the arable lands were chiefly cultivated to produce feed for the sheep, hence the large proportion of seeds and root crops and small acreages of corn crops recorded in the files.

### CONCLUSIONS

The system of agriculture based on sheep rearing practised on the very lightest soils, i.e. in the Breckland, was very different from that practised in other parts of Suffolk about 1840. There were extensive heaths and pastures in the Breckland which were suitable for grazing sheep, but there was only a small quantity of arable land; the crops which were grown were almost entirely for sheep feed — roots, artificial grasses and green crops. Very little wheat or barley was produced, most of the land being too light and too poor to produce much other than rye and light oats.

In the rest of the county the produce of arable land was all important, and though animals formed an integral part of the system, livestock was really a means of increasing the productivity of the arable. Recent improvements in the clay lands such as drainage, the introduction of root crops, more livestock and better manuring meant that in many heavy-land parishes a four-course rotation very similar to that adopted on the light soils of east and south-east Suffolk could be practised. The difference in the agriculture of the light and heavy lands at this time was not so much the type of crops grown but more one of proportions and yields of various crops. On both light and heavy soils wheat and barley generally occupied about a quarter of the arable in a parish. However, yields of wheat and barley were higher in the clay-land parishes of central, east and north-east Suffolk than elsewhere in the county. On the light soils there was virtually no bare fallowing (roots occupied the whole of the fallow course) but on the clay soils summer fallows were still used, though they were decreasing and roots taking their place. In the southern part of the clay lands bare fallowing had virtually disappeared. Pulses and artificial grasses completed the rotation here. Again there is a difference between the proportions of these crops being grown on light and heavy soils. On light soils, artificial grasses were grown much more than pulses, whereas in most clay-land parishes in the south of the county, pulses and artificial grasses (mainly clover) occupied approximately half a course each. However, other green crops such as tares, trefoil and white clover were becoming more popular than pulses as an alternative to red clover. The clay soils, though more productive of corn, grew fewer roots and artificial grasses than the light soils and so were not able to support as much livestock or generate as large a quantity of manure.

So, was there a laggard sector in Suffolk farming that can be readily identified with areas of heavy soils? Or was output from clay lands in fact greater? The evidence of the tithe files is equivocal on these points. The crop estimates of assistant commissioners and local agents certainly enable the differences between light- and heavy-soil farming in terms of crop percentages and yields to be identified. This in itself is a refinement of the crude pattern of arable and pasture which it is possible to extract from tithe apportionments and maps. Moreover, the parish tithe files permit a much more detailed analysis of crop distributions than the 1854 crop returns for the eighteen Suffolk Poor Law Unions recently examined by J. P. Dodd.<sup>51</sup> For example, in addition to differentiating between agriculture on light and heavy lands it is possible to suggest tentatively that there was a distinction between the cultivation of heavy soils in the south of Suffolk and other clay lands in the county. Although the four-course rotation was followed throughout the clay lands, the proportions of the various crops were rather different. Bare fallowing was less and fewer pulses were grown in the southern area. To offset this, more roots, clover and seed crops were grown than in the central clay districts of Suffolk (Appendix

IV). Tithe file evidence suggests that corn yields were somewhat lower in southern clay parishes than on heavy soils elsewhere. In these respects, the cultivation of heavy soils in south Suffolk seems to have been more akin to the cultivation of the light soils to the east than to the rest of the Suffolk heavy soil sector.

One of the great strengths of the tithe files as a source is that the assistant commissioners' and local agents' reports provide a record of the on-the-spot impressions of these experienced, practised observers of the agricultural scene. It must be acknowledged that these were often obtained on fleeting visits and were sometimes written up without due time for reflection and further enquiry. They are therefore only suggestive; the answers they provide are not necessarily definitive with respect to a particular place. Such definitive answers will only be found by detailed analyses of farmers' and land owners' papers which provide the means to see beyond the patterns recorded by synchronous sources like the tithe surveys to the processes that created them.

APPENDICES

APPENDIX I: AUTHORS AND DATES OF REPORTS ON AGREEMENTS FOR TITHE COMMUTATION IN SUFFOLK

<i>Assistant Commissioner</i>	1837	1838	1839	1840	1841	1842	1843	1844	1845	1846	Total
Henry B. Gunning			27	37	14	4	1	1		2	86
J. D. Merest	22	25	13	2		2					64
Roger Kynaston		8	40	1							49
William Heard			12			11	10		2		35
John Pickering		9		10	3	2					24
Arthur Biddell	3	14	4								21
J. Mee Mathew		19									19
F. Browne Browne		1	6	6							13
T. S. Woolley	12										12
Horace Meteyard		12									12
Thomas Turner	6	1									7
Thomas Sutton	1	3	2								6
Mears		4		1							5
Henry Dixon	1										1
William Downes		1									1
<i>Totals</i>	45	97	104	57	17	19	11	1	2	2	355

APPENDIX II: LAND USE IN SUFFOLK ABOUT 1840

<i>Land Use</i>	<i>Sample Size*</i>	<i>Acreage Enumerated</i>	<i>%Acreage Enumerated</i>	<i>County Acreage†</i>
Arable	269	324,180	70.3	665,716
Grass	268	94,101	20.4	193,240
Wood	268	16,706	3.6	34,306
Common	269	19,550	4.2	40,146
<i>Totals</i>		454,537	98.5	933,408

\* 'Sample size' is the number of tithe districts with reports on agreement which meet the criteria discussed above in the section *The Suffolk Tithe Files*.

† The county acreage figures have been obtained by multiplying the available tithe file data by a weighting factor equivalent to the county area: sample area ratio (2.0535378).

## APPENDIX III: CROP ACREAGES AND YIELDS IN SUFFOLK ABOUT 1840

<i>Crop</i>	<i>Sample Size*</i>	<i>Mean% Arable</i>	<i>Mean Yield</i>	<i>County Acreage†</i>
Wheat	268	24.0	23.2 bus	158,910
Barley	264	23.3	32.4 bus	154,918
Oats	265	1.6	36.9 bus	10,818
Pulses	257	5.9	25.1 bus	39,568
Turnips	263	14.0	£2 14s.	92,908
Seeds	259	19.4	21.9 cwts	129,303
Fallows	265	9.8		65,037

\* 'Sample size' is the number of districts with data for the particular crops.

† The county acreages for each crop have been obtained by multiplying the available tithe file data by the particular weighting factor equivalent to the county area: sample area ratio.

## APPENDIX IV: PERCENTAGE OF ARABLE SOWN WITH PULSES, SEEDS AND ROOTS OR IN BARE FALLOW IN SOME CENTRAL AND SOUTHERN CLAY-LAND PARISHES IN SUFFOLK ABOUT 1840

<i>Southern Clay Lands</i>	<i>% Pulses</i>	<i>% Seeds</i>	<i>% Roots</i>	<i>% Bare Fallow</i>
Hadleigh	—	25	25	—
Stoke by Nayland	—	25	25	—
East Bergholt	—	25	25	—
Polstead	—	25	25	—
Reydon	5	20	20	—
Assington	—	25	25	—
<i>Central Clay Lands</i>				
Framlingham	8	17	3	22
Earl Soham	11	16	9	14
Stonham Aspull	13	13	13	13
Stowupland	10	17	14	9
Cotton	12	12	—	25
Thwaite	12	12	—	25

## NOTES

<sup>1</sup> Kain 1979, 225–41.

<sup>2</sup> Phillips 1973, 27–52; Collins and Jones 1967, 65–81.

<sup>3</sup> Data have been mapped using a version of the GIMMS 3 computer-mapping program modified especially for this project by Dr John Buckett of the University of Exeter. We are pleased to acknowledge his help. The program is described in Waugh 1977.

<sup>4</sup> The fenland district in the north-west of Suffolk is the one part of the county with imperfect coverage. Another notable omission is that the tithe survey contains very little information on the produce of gardens; very few market gardens are in fact enumerated in the surveys of this county while just 10 acres of orchards are recorded in the tithe files!

<sup>5</sup> Cox and Dittmer 1965, 1–16.

<sup>6</sup> See the method employed in Kain and Holt 1981, 139–81.

<sup>7</sup> Copies of these indexes are lodged with the S.S.R.C. Archive at the University of Essex.

<sup>8</sup> Public Record Office, Inland Revenue, IR/18/9983.

<sup>9</sup> Raynbird 1847, 261.

<sup>10</sup> Caird 1982, 152.

<sup>11</sup> IR/18/9958.

<sup>12</sup> IR/18/9933; see also Stoke Ash, 9975 and Mellis, 9874.

<sup>13</sup> IR/18/9847.

<sup>14</sup> IR/18/9582 Bedfield, 9749 Fressingfield, Grundisburgh 9766, Laxfield 9860, Shaddingfield 9946.

<sup>15</sup> IR/18/9776.



- <sup>16</sup> IR/18/9951; see also Kenton, 9844.
- <sup>17</sup> IR/18/9752 Fritton, 9806 Homersfield, 9578 Bawdsey, 9920 Ramsholt.
- <sup>18</sup> Postgate 1961.
- <sup>19</sup> IR/18/10031 Wangford by Brandon and also Great Livermere, 9868 and Eriswell 9725.
- <sup>20</sup> Common which at best produced very little titheable produce was not usually assiduously valued by assistant commissioners; it is likely, therefore, that some areas of common producing trifling contributions to gross titheable produce were overlooked.
- <sup>21</sup> IR/18/9912.
- <sup>22</sup> Burrell 1960, 172; see also IR/18/9871 Lowestoft.
- <sup>23</sup> Raynbird 1847, 264.
- <sup>24</sup> See, for example, IR/18/9597 Blythburgh, 9712 Easton Bavents, 9929 Reydon.
- <sup>25</sup> IR/18/9866.
- <sup>26</sup> See, for example, IR/18/10043 Westleton.
- <sup>27</sup> IR/18/9854.
- <sup>28</sup> IR/18/9916 Pettistree.
- <sup>29</sup> IR/18/9577.
- <sup>30</sup> Glyde 1856, 337.
- <sup>31</sup> IR/18/9776 Hasketon.
- <sup>32</sup> IR/18/9573, 9889.
- <sup>33</sup> IR/18/9623.
- <sup>34</sup> IR/18/9883; see also Chediston 9664.
- <sup>35</sup> IR/18/9975.
- <sup>36</sup> IR/18/9716.
- <sup>37</sup> See, for example, IR/18/9755 Gedding, 9746 Framlingham.
- <sup>38</sup> IR/18/9736, 9603.
- <sup>39</sup> See, for example, IR/18/9736 Flixton.
- <sup>40</sup> IR/18/10057; see also Stoke Ash 9975, Holton St Peter 9804, Poslingford 9918.
- <sup>41</sup> See, for example, IR/18/9849 Kettleburgh, 9736 Flixton, 9866 Linstead Magna, 9709 Earl Soham, 9582 Bedfield, 9569 Barking-cum-Needham.
- <sup>42</sup> IR/18/9709 Earl Soham, 9581 Beccles, 10041 Westhall, 9797 Heveningham.
- <sup>43</sup> IR/18/9978.
- <sup>44</sup> See, for example, IR/18/9951 Somerton.
- <sup>45</sup> IR/18/9770 Halesworth and 9804 Holton St Peter.
- <sup>46</sup> See, for example, IR/18/10057 Wickham Skeith and 10059 Willingham.
- <sup>47</sup> See, for example, comments at Holton St Peter, Boulge and Chediston, IR/18/9804, 9598, 9664 respectively.
- <sup>48</sup> IR/18/9662 Chattisham.
- <sup>49</sup> See, for example, IR/18/9612 Alderton, 9920 Ramsholt, 9578 Bawdsey, 10040 Westerfield, 10076 Wortham.
- <sup>50</sup> IR/18/9929; see also Westerfield 10040.
- <sup>51</sup> Dodd 1979, 191 – 204.

#### REFERENCES

- Burrell, E. D. R., 1960. 'An Historical Geography of the Sandlings of Suffolk, 1600 – 1850' (unpublished M.Sc. thesis, University of London).
- Caird, J., 1852. *English Agriculture in 1850 – 51*. London.
- Collins, E. J. T. and Jones, E. L., 1967. 'Sectoral Advance in English Agriculture, 1850 – 80', *Agr. Hist. Rev.*, xv, 65 – 81.
- Cox, E. A. and Dittmer, B. R., 1965. 'The Tithe Files of the Mid-Nineteenth Century', *Agr. Hist. Rev.*, xiii, 1 – 16.
- Dodd, J. P., 1979. 'The Suffolk Crop Returns of 1854', *Proc. Suffolk Inst. Archaeol.*, xxxiv, 191 – 204.
- Glyde, J., 1856. *Suffolk in the Nineteenth Century*. London.
- Kain, R. J. P., 1979. 'Compiling an Atlas of Agriculture from the Tithe Surveys', *Geog. J.*, cvl, 225 – 41.
- Kain, R. J. P. and Holt, H. M. E., 1981. 'Land Use and Agriculture in Cornwall circa 1840', *Southern Hist.*, iii, 139 – 81.
- Phillips, A.D.M., 1973. 'A Study of Farming Practices and Soil Types in Staffordshire around 1840', *N. Staffordshire J. F. Stud.*, xiii, 27 – 52.
- Postgate, M., 1961. 'Historical Geography of the Breckland, 1600 – 1850' (unpublished M.A. thesis, University of London).
- Raynbird, H., 1847. 'On the Farming of Suffolk', *J. Roy. Agr. Soc. Engl.*, viii, 261 – 329.