

Taking Stock: Farmers, Farm Records, and Agricultural Output in England, 1700–1850¹

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Abstract

The authors take up Patrick O'Brien's challenge of twenty years ago to introduce into agricultural history some hard data on production and output. They present the findings of a pilot project of the availability of farm records for the period 1700–1835. The introduction restates the challenge, after which the paper falls into three main parts and a conclusion. Part one is a brief summary of the current progress in assessing specific aspects of farm production, output, and productivity over the long eighteenth century; part two summarizes the survival rate of English farm records from 1700–1835; and part three is a sensitivity analysis of the value of these records. The conclusion reformulates the challenge into a realistic wider project to open up the hidden data of English agricultural production.

IN 1977 Patrick O'Brien characterized agricultural history as “soft” precisely because statistics on output at local and national level are almost non-existent.² In specifically referring to the estimation of capital formation he concluded that:

attempts now under way to measure capital formation for the national economy are unlikely to include a satisfactory index for agriculture before the nineteenth century. Only further and more laborious research into farm and estate records might offer historians a basis for speculation about the contribution of capital formation to the growth of farm output after 1650.³

A response to O'Brien's comments by agrarian historians is long overdue. Indeed, it is made even more pressing by two developments: recent research on the sixteenth and seventeenth centuries using probate inventories, which has substantially increased our knowledge of early modern agricultural productivity; and changes in our understanding of the ‘agricultural revolution’ which have put it firmly back into

the later eighteenth and early nineteenth centuries.⁴

Together these have provided evidence for the early modern period and at the same time focused attention even more clearly on what is a black hole in our statistical base on agricultural output and production – at least on anything greater than a local level – for the ‘agricultural revolution’. J A Chartres in a chapter on the marketing of agricultural produce in the period 1640–1750 for volume V of the *Cambridge Agrarian History of England and Wales* made tentative estimates of the output of cereals for the years 1695 and 1750, and of livestock for 1695, and B A Holderness, in a chapter on productivity and output for volume VI of the same series covering the period 1750–1850 made a valiant attempt to extend the output figures to 1800 and 1850. However, the brevity of their material and the disparity in some of their figures for 1750 reveal just how far the problem identified by O'Brien nearly twenty years ago remains un-

¹ We should like to thank the University of Hull Research Support Fund for financing the pilot project which is reported here, and two anonymous referees.

² P K O'Brien, ‘Agriculture and the industrial revolution’, *Econ Hist Rev*, 2nd ser, XXX, 1977, p 170.

³ *Ibid*, p 168.

⁴ By the latter we mean the move away from an explanation of the agricultural revolution as a phenomenon of the period prior to 1750. For the clearest recent restatement of this new orthodoxy see Mark Overton's paper in this issue of *Agricultural History Review*.

answered.⁵ Our question in this paper is simple: is there a way of bridging the period from the probate inventories of the seventeenth century to the agricultural statistics of the nineteenth century by using the 'farm and estate records' to which O'Brien referred? And if so, are those records robust enough to be able to fill the black hole of the eighteenth century?

In approaching these questions we were aware of two articles published thirty years ago by E J T Collins in which he argued that a body of material existed but had yet to be systematically exploited.⁶ We have investigated this material both to establish whether or not Collins was right, and as a preliminary to trying to answer O'Brien's question. In the first part of this paper we look briefly at the existing corpus of material for answering questions about output and productivity in English farming. We present in the second part the results of a survey which suggest that in simple quantitative terms (ie the number of surviving records) the data exist. In the third part we offer some preliminary results based on a sensitivity analysis of the records, and we conclude by suggesting that the work can be done, but that the material originally identified by Collins may not provide all the answers anticipated by O'Brien.

I

The black hole to which we referred above covers the period from roughly 1700 until the 1840s. For the sixteenth and seventeenth centuries we have the recent findings of Overton, Glennie, and others who have derived crop yields from probate

inventories.⁷ Plausible methods of estimation reveal grain yields in the quarter century or so before 1700 of just over 15 bushels per acre in Norfolk and Suffolk, just under 15 bushels per acre in Lincolnshire, and something between 12 and 16 bushels per acre in Hampshire.⁸ There are other estimates for other counties, and if R C Allen's particular method for estimation is adopted those estimates are usually larger. In other words we are building up an interesting county-by-county picture of crop yields at the end of the seventeenth century and the beginning of the eighteenth, and those estimates can be taken back to the sixteenth century.

Unfortunately, probate inventories tend to run out after about 1700, especially in southern and eastern England, and even where they continue into the middle and later eighteenth century the detail they contain thins out considerably. There are no further national data sets prior to the 1790s although spot data and qualitative material can be derived from the travels of Arthur Young and from the *General View(s)* which he and others prepared for the Board of Agriculture between 1794 and 1817. Yet some of those contemporary estimates seem almost to come from another planet. For example, John Middleton, the author of both of the *General Views* for Middlesex, indulged in a little national income accounting as far as agriculture was concerned, but our admiration for his heroic efforts are coloured somewhat when we realize he supposed a figure for the extent

⁵ J A Chartres, 'The marketing of agricultural produce', in J Thirsk, ed, *The Agrarian History of England and Wales, Volume V, 1640-1750*, part II, 1985, pp 444-5; B A Holderness, 'Prices, productivity, and output', in G E Mingay, ed, *The Agrarian History of England and Wales, Volume VI, 1750-1850*, 1989, pp 145, 155.

⁶ E J T Collins, 'Historical farm records', *Archives*, VII, 1966, pp 143-9; E L Jones and E J T Collins, 'The collection and analysis of farm record books', *Journal of the Society of Archivists*, III, 1965, pp 86-89.

⁷ For estimates of early eighteenth-century crop yields see R C Allen, 'Inferring yields from probate inventories', *Jnl Econ Hist*, XLVIII, 1988, p 123; P Glennie, 'Measuring crop yields in early modern England', in B M S Campbell and M Overton, eds, *Land, Labour and Livestock: Historical Studies in European Agricultural Productivity*, Manchester, 1991, p 273; M Overton, 'The determinants of crop yields in early modern England', in *idem*, pp 302-3; M Overton, 'Re-estimating crop yields from probate inventories', *Jnl Econ Hist*, L, 1990, pp 932 and 934. See also G Clark, 'Yields per acre in English agriculture, 1250-1860', *Econ Hist Rev*, 2nd ser, XLIV, 1991, especially pp 447-8.

⁸ Overton, 'The determinants', pp 302-3; Glennie, 'Measuring crop yields', p 273.

of England and Wales of 46.9 million acres, just over 10 million acres greater than the true extent, and which, more alarmingly, we understand from J R McCulloch that he and others had adopted uncritically from Arthur Young's own estimate.⁹

However, aside from these doubtfully useful contemporary national appraisals, in the late eighteenth and early nineteenth centuries we can derive harder, mainly local, data from the evidence gathered centrally during the corn crises of the French wars in the 1790s. These include the livestock returns which central government called for from the coastal counties in case the threatened invasion by the French materialized. The invasion scare lasted from 1796 to 1801, and was renewed in 1803. The idea was to implement a plan to 'drive the country' in the event of invasion, that is to marshall the available live and dead stock in coastal and near coastal parishes and transport them inland, and thereby deny the invader an immediate source of supply. The ensuing live and dead stock returns exist in a very fragmentary manner: there are data for entire counties (Dorset, Essex, Lincolnshire, Norfolk, Northumberland and Sussex); for large parts of some counties (Antrim and Down in Northern Ireland, and Dorset again in a second survey); and fragments for other counties (Durham, Somerset and North Yorkshire).¹⁰ The main value of these returns to the historian is in providing a livestock census, but given the poor survival rate (or more likely the uneven manner in which the instructions of central government were carried out) there are not enough of these returns for the west of England counties from which

to make plausible national animal estimates.¹¹

Of greater value are the other records of the early years of the French wars, records which were generated when the combination of the war and its effects on disrupting supplies, and the concurrent harvest difficulties, threw the country into a panic over food self-sufficiency. The Home Office carried out a number of supposedly national enquiries into the state of the harvest in various years, those enquiries directed to county lords lieutenants in the main, but culminating in the well-known 1801 crop returns, the responsibility for which the Home Office vested in the church through its diocesan offices, and hence to the parish clergy. The main value of the data derived from these various enquiries is in providing a wealth of information on crop yields and crop acreages. There are problems over the quality of the data and over their geographical coverage, yet they have been used to make plausible estimates of the extent both of the national arable acreage and national crop yields on or around 1800, thus furnishing a datum at the end of the eighteenth century which complements the one derived for yields, at least, from the probate records of the late seventeenth century.¹²

After the Napoleonic wars there are no consistent datasets to which we can turn before the reports drawn up by assistant commissioners prior to tithe commutation in the wake of the 1836 Tithe Commutation Act. These reports do not cover the whole country, and although they have been comprehensively mapped

⁹ J Middleton, *A General View of the Agriculture of Middlesex*, 1st ed, 1798, 2nd ed, 1807, pp 487 (1st ed), 642 (2nd ed); J R McCulloch, *A Statistical Account of the British Empire*, vol 1, 1837, p 5.

¹⁰ M E Turner, 'Land use in England c 1800', in A D M Phillips, ed, *Agriculture in Nineteenth-Century England: Land Use Change 1800-1870*, Forthcoming, especially tables 13, 14 and 15.

¹¹ The local county lieutenancy was charged with the task of carrying out the inventory of live and dead stock, and it is amongst the county lieutenancy records that the best returns can now be found, but as with many things there was apparently uneven devotion to duty at the local level.

¹² See M E Turner, 'Agricultural productivity in England in the eighteenth century: evidence from crop yields', *Econ Hist Rev*, 2nd ser, XXV, 1982, especially pp 499-505; *idem*, 'Arable in England and Wales: estimates from the 1801 crop return', *Jnl Hist Geog*, 7, 1981, pp 291-302; *idem*, 'Land use in England', especially tables 6-9.

doubts remain about the quality of the data. The material is certainly useful as an indication of the type of farming taking place in each district. However, the data relate only to the tithable portion of the produce and they were only estimates of what might be produced on an average. In many instances they were simply nominal figures when the assistant commissioner made estimates rather than ascertaining the true quantities. To these problems we can add the likely bias in the material arising from the fact that most of the parishes commuting tithes after 1836 were still unenclosed, and such parishes were not usually noted either for progressive or innovative farming. The overall database may therefore present a more pessimistic view of agricultural output than would be the case with a true random sample.¹³

Only from the 1850s do we begin to have data available which was systematically collected and collated, beginning with the 1854 surveys of agriculture, and continuing with the relatively complete collection of data from 1866 onwards in the form of the annual agricultural returns, principally of crop acreages and livestock numbers.¹⁴ From 1885 onwards these returns also included data on crop yields (though estimates not measurements) from which output and productivity estimates can be derived. In addition, the 1894 Royal Commission on Agriculture represents an almost forgotten exploitation on a semi-systematic basis of the specific ramifications of the late nineteenth-century agricultural

depression.¹⁵ It was in the nature of that enquiry to pose a set of necessary and systematic questions, in order to solicit meaningful answers. As much as anything this was based on considerations of profit and loss during the difficult agricultural times of the 1880s. Perhaps the model for such inquiries was the equivalent depression period after the French Revolutionary and Napoleonic wars which provoked inquiries in the 1830s.¹⁶ Practical farmers, amongst other interested parties, formed a large proportion of the witnesses to all the enquiries.

The gap we need to try to fill is clear, but does the material exist even to begin our quest? The starting point is logically with the farm producers themselves, the farmers, and therefore obviously with the farm records which they kept and which have survived. The best known farm records are those which form part of estate collections, usually because they are either for in-hand farms or home farms serving, at least in part, the agricultural needs of the great house. As such, the management of their production and, in the case of farms in hand, the size and structure of their outputs and inputs, such as capital expenditure, may be atypical. Much is known about the estate, and therefore about the landlord although such studies have largely been self-selected by the survival of estate records, and they are therefore often subject to the bias of size. Many families are still around and still husband their estates, and even when their records are not *in situ* they have often found their way into the public repositories. Big or small however, agricultural, political, social and economic historians have discovered

¹³ R. J. P. Kain and H. C. Prince, *The Tithe Surveys of England and Wales*, 1984; R. J. P. Kain, *An Atlas and Index of the Tithe Files of Mid-Nineteenth-Century England and Wales*, 1986; A. D. M. Phillips, 'Agricultural land use, soils and the Nottinghamshire tithe surveys, circa 1840', *East Midland Geographer*, 6, 1976, p. 288; M. Sill, 'Using the tithe files: a County Durham study', *Local Historian*, 17, 1986, pp. 205-11.

¹⁴ J. P. Dodd, 'The Agricultural Statistics for 1854: an assessment of their value', *Ag Hist Rev*, 35, 1987, pp. 159-70; MAFF, *A Century of Agricultural Statistics: Great Britain 1866-1966*, 1968.

¹⁵ For example, see Royal Commission on Agriculture, *Particulars of Expenditures and Outgoings on Certain Estates in Great Britain and Farm Accounts*, B(ritish) P(arliamentary) P(apers), c. 8125, 1896, as only one volume amongst several which *inter alia* used farm accounts in evidence.

¹⁶ For example, BPP, 1836, VIII, VIIIi and VIIIii, *Report from the Select Committee appointed to inquire into the State of Agriculture and into the causes and extent of the Distress; with the Minutes of Evidence and Appendix*.

much about particular estates and their collective contribution to the national economy.¹⁷

By contrast, the records for tenanted or owner-occupied farms are likely to give a rather different picture. The difficulty in the past has been to locate and use such material, given that farmers seem always to have been reluctant to keep records, and the smaller the farm (and with this the greater the input of family labour) the less likely they were to have generated material which would have even a chance of surviving. It may be for this reason that relatively little is known of the working farmer.¹⁸ However, the farm records of the working farmer are as close as we may ever approach to the blunt end of agricultural production. Even though tenanted farms were situated on estates, the estate owners were predominantly interested in exacting a rent, and this primary interest was reflected in the main estate records, along with allied involvement such as the provision of capital. From the farms the rents flowed to the landowner, but as far as his estate records are concerned, very often the connection ended with this purely business arrangement.

II

We recognize that the quality and quantity of farm records are not likely to match those of estate records more generally. Yet the importance of seeking out such material cannot be denied. Farmers were the men

and women who supplied the landlords with their incomes and the nation with its produce, and they did so during what we might call the long eighteenth century, as the country industrialized. If there was productivity advance and if there was innovation it was due to the acts of farmers. Even where landlords were innovatory, necessarily it was the farmers who had to put new and better ideas into practice. Consequently they played a critical role in providing whatever contribution agriculture made to the industrial revolution, and this makes it all the more necessary that we should try to take up O'Brien's challenge.

Perhaps it is because farming has not been treated as a business that no one has undertaken a systematic review and analysis of surviving farm records in the thirty years since Collins first drew attention to them.¹⁹ We are not referring here to the odd farm or estate record used in the specific biography of person and place, of which countless examples exist, but rather the systematic exploitation of farm account books to study the essentials of agricultural history, whether in regard to agricultural production, capital formation, or estate and farm management. If we can establish the survival of records in quantity, and with a known quality it should be possible to set out an agenda to answer the large questions posed by O'Brien. And once in motion that agenda will necessarily focus the attention on farming as a business enterprise, and on the farmers as the businessmen, although in saying that we are well aware that the extent to which they were business-like remains to be tested.

Table 1 gives the results of our enquiries into the quantity of surviving farm accounts. The first of our three main sources was the University of Reading

¹⁷ The number of studies is legion: the following is just a glimpse of a wider bibliography. On specific 'estates' see S Wade Martins, *A Great Estate at Work: the Holkham Estate and its Inhabitants in the Nineteenth Century*, 1980; R A Kelch, *Newcastle A Duke Without Money: Thomas Pelham-Holles 1693-1768*, 1974; J V Beckett, *Coal and Tobacco: The Lowthers and the Economic Development of West Cumberland 1660-1760*, 1981; and for the collective see G E Mingay, *English Landed Society in the Eighteenth Century*, 1963; F M L Thompson, *English Landed Society in the Nineteenth Century*, 1963; J V Beckett, *The Aristocracy in England 1660-1914*, Oxford, 1986.

¹⁸ We are thinking here of recent secondary works rather than the numerous articles published during the nineteenth century in the *Journal of the Royal Agricultural Society of England* and other similar periodicals, and often written by the farmers themselves.

¹⁹ Since which time D M Woodward's edition of, *The Farming and Memorandum Books of Henry Best of Elmswell, 1642*, 1984 has appeared and should join the list of the few well annotated sets of farmers' records which have been published.

TABLE 1
The farm records database

Survey	Number of records
University of Reading Archive	136 (807)*
1973 Catalogue (Reading Library)	
Farm records nationwide,	423
project at Reading early 1970s, no	
catalogue (Rural History	
Calendar)	
National Register of Archives	250
Index of <i>Farmers and Growers</i>	
(NRA Index)	

* These figures are explained in the text.

Library Archives which is also associated with the Rural History Centre (hereafter Reading Library). The catalogue of the Reading holdings was published in 1973, and not a great deal has been added since then. The index to the catalogue reveals that in 1973 a farm record of some description was known to exist for 807 individual English farms, mainly from the early eighteenth to the middle twentieth century. They include a record for a farm in every English county, ranging from just one each for Derbyshire, Northumberland, Rutland and Westmorland, to over 50 for Berkshire, Kent and Wiltshire, and a top score of 171 for Essex.²⁰

There is a clear spatial concentration centred on southern and south Midland counties, and a temporal concentration over the last 150 rather than the previous 150 years. A more detailed and specific inspection of the records reveals a possible 136 'archives' (from the 807) which may be used to a greater or lesser degree in the narrower study of agricultural production, output and profitability for the period 1700–1835. These records contain references to one or more of payments, accounts, labour records, receipts, cash books, dairy sales, diaries and journals,

millers' accounts, cropping books, sales books, daybooks, and corn and livestock accounts. Ideally such data are required for runs of years thus allowing in a fixed location some sense of the progress in agricultural and technical development. On average, for the years up to the 1740s there are 7 usable documents per annum, rising to 16 for the next four decades and to 37 for the first three decades of the nineteenth century. This more specific appraisal of the whole archive necessarily reveals some serious holes in the spatial distribution with a general implosion of surviving records towards the south and south Midlands. Thus there are no usable records in categories related to agricultural production for Cornwall, Cumberland, Durham, Herefordshire, Huntingdonshire, the Holland and Lindsey divisions of Lincolnshire, Rutland, Sussex, and the Isle of Wight.

Further investigation to reveal the more intimate qualities of these data necessarily reduces the usable archive for a study of farm production alone, though such data may be used in allied studies related to wider questions of farm management and strategy. There is anecdotal evidence, and personal recollection, observation and opinion, and of course accounts concerned with related trades such as brewing, milling, thatching, and butchering. Studies of the broad profitability of individual farms, or groups of farms, can be envisaged.

While the Reading archive is the largest single concentration of these records, and holds great potential, it is not the only archive. Our second source of information came from an earlier project, also undertaken at Reading, in which a detailed calendar was compiled of farm records held in private and public repositories throughout the United Kingdom (hereafter Rural History Calendar).²¹ From this list a total of 423 farm records with the potential to

²⁰ University of Reading Library, *Historical Farm Records*, Reading, 1973, index of farms, pp 293–309. Note we refer here to farms, but there are many more entries for other miscellaneous documents which are not necessarily farm or farming specific.

²¹ From information at Reading University Rural History Centre.

offer data for investigation of issues related to agricultural output have been identified for the period 1700–1835. The temporal pattern mirrors that in the Reading archive but, of course, this time the spatial pattern is not determined by proximity to the south of England. The calendar has not been updated since the early 1970s, but farm records have continued to find their way into archives across the country. Consequently, thirdly and finally, we have analysed the computerized index at the National Register of Archives, and this has added over 250 further records (hereafter NRA Index).²²

The total database runs to about 800 items (Table 1). It is possible that some of the records in the Rural History Calendar overlap with those in the NRA Index, although considerable efforts were made to avoid double counting. Table 2 indicates the distribution of potential archives by county, subdivided by period and by list. Individual farm records frequently stretch across two or even three of our artificial time periods, which explains why the totals given in Table 2 exceed those in Table 1. Our data are not simply spot-date material; rather, they frequently run over long time periods. Figure 1 maps this information to demonstrate spatial coverage. Figure 2 gives an indication of the quantity of surviving records by presenting the material in Table 2 on an annual basis. The volume of potential archives identified in Tables 1 and 2 and Figures 1 and 2 suggests that the material exists to apply a new approach to old problems regarding the agricultural revolution, through farm output and productivity – of which we still know so little – and by a close study of the people who were most directly interested in the business of farming, the farmers themselves. In all of this we accept that the technical and managerial expertise of the farmers may

turn out to be as critical as environmental factors in determining output and productivity.

We would emphasize that these farm records remain potentially rather than actually usable. This is particularly so with material located through the NRA Index which by its very nature tends to be the more general of the three lists. For example, in a number of cases where a particularly long run of records appears in the index, closer scrutiny of the archive has revealed the inclusion of early deeds, leases and other material which will not be of particular use in this project. The Rural History Calendar was compiled to target more specific material such as accounts, diaries, cropping books, surveys, valuations, and the like. We also recognize that especially in the early decades of the eighteenth century the scatter of documents in both numbers and geographical coverage will undoubtedly limit the conclusions that can be drawn. The practice of bookkeeping was still in its infancy. Even on an estate managed by a bailiff or steward who was responsible for its management, and hence answerable to the landowner, written records are often sparse. For a farmer to record details of a single farm, and for those records to survive, would be exceptional. Consequently the shortfall in records from the late seventeenth and early eighteenth centuries is not simply a matter of survival rates. The position improves over time, and by the early nineteenth century in all but seven counties there are at least five separate records annually, and the number rises to twenty in thirteen counties.

As a result of these limitations we recognize that those keeping farm records are unlikely to be representative of the class of farmers as a whole. They tend to come from the larger than average holding. The majority of farms in England were too small to generate written records. A farm of under 100 acres would generally not employ sufficient labour outside the family

²² An appendix of these data is under construction and copies can be obtained from the authors.

TABLE 2
Historical farm records by counties and time periods

County	Reading Library			Rural History Calendar				NRA Index				Total		
	1700-44	1745-89	1790-1835	1700-44	1745-89	1790-1835	1700-44	1745-89	1790-1835	1700-44	1745-89	1790-1835	1700-44	1745-89
Beds	0	0	6	0	3	4	0	1	10	0	4	20	0	4
Berks	2	3	10	2	9	11	0	0	1	4	12	22	4	12
Buck	3	5	5	1	2	2	0	2	2	4	9	9	4	9
Cam	0	1	2	1	5	10	0	3	9	1	9	21	1	9
Ches	0	1	2	0	4	4	0	3	4	0	8	10	0	8
Corn	0	0	0	1	5	7	0	1	1	1	6	8	1	6
Cumb	0	0	0	0	1	3	0	0	1	0	1	4	0	1
Derb	1	1	1	6	7	5	0	1	3	7	9	9	7	9
Dev	2	3	1	4	9	17	1	4	9	7	16	27	7	16
Dors	0	2	0	2	2	2	2	7	7	4	11	9	4	11
Durh	0	0	0	1	2	2	1	1	2	2	3	4	2	3
Essex	1	3	10	9	28	47	2	6	16	12	37	73	12	37
Glos	1	3	5	9	9	3	4	8	13	14	20	21	14	20
Hants	1	3	5	5	3	4	2	3	11	8	9	20	8	9
Heref	0	0	0	3	2	4	1	1	6	4	3	10	4	3
Herts	1	3	0	2	5	10	0	4	5	3	12	15	3	12
Hunt	0	0	0	2	3	2	0	1	3	2	4	5	2	4
I o W	0	0	0	3	4	4	0	2	3	3	6	7	3	6
Kent	2	4	7	9	16	13	4	7	7	15	27	27	15	27
Lancs	0	0	1	3	6	6	0	3	7	3	9	14	3	9
Leic	0	0	2	2	4	4	0	1	5	2	5	11	2	5
Lincs H	0	0	0	0	1	1	0	1	3	0	2	4	0	2
Lincs K	0	0	1	0	0	0	0	1	2	0	1	3	0	1
Lincs L	0	0	0	0	0	13	0	2	9	0	3	22	0	3
Middx	0	1	4	0	0	0	1	2	1	1	3	5	1	3
Norf	4	2	2	0	3	9	1	2	11	5	7	22	5	7
N'ton	0	0	1	2	3	6	0	2	6	2	5	13	2	5
N'land	0	0	1	0	2	3	0	0	5	0	2	9	0	2
Nott	0	1	0	0	0	3	0	2	4	0	3	7	0	3
Oxon	1	2	8	2	3	3	0	0	1	3	5	12	0	5
Rut	0	0	0	0	0	0	0	1	1	0	1	1	0	1
Salop	1	1	1	1	4	6	0	0	4	2	5	11	2	5
Som	0	0	1	2	5	8	0	2	4	2	7	13	2	7
Staff	0	1	1	5	8	10	1	2	3	6	11	14	6	11

Suff	0	1	2	1	3	10	0	2	6	1	6	18
Surr	0	0	2	6	4	3	3	6	4	9	10	9
Suss	0	0	0	4	10	8	5	10	14	9	20	22
Warw	0	0	3	0	1	4	1	3	5	1	4	12
W'land	0	0	2	0	2	2	0	0	0	6	2	4
Wilt	2	4	12	4	5	6	4	7	9	10	16	27
Worc	0	0	3	1	8	6	0	2	6	1	10	15
Yorks E	1	0	0	0	0	1	1	2	1	2	2	2
Yorks N	1	2	4	0	0	4	1	1	2	2	3	10
Yorks W	1	2	1	2	6	8	1	1	13	4	9	22
Total	(	180	)	(	571	)	(	385	)	(	1136	)

In the Rural History Calendar we have been unable to locate 4 records within the divisions of Lines for the second time period and 6 records for the third time period. In the NRA Index we have been unable to locate one Yorkshire record within its riding for the third time period.

to require labour books. The sale of produce off such a farm would not be complex enough to create a need for detailed farm accounts. As late as 1870 over 80 per cent of the farms in England and Wales were 100 acres or less, and the average farmer probably found little cause to keep detailed written accounts. The sample of farm accounts and related records is likely as a result to represent the more entrepreneurial farmer, the man or woman with a larger than average holding, making more complex sales and purchases, and employing a labour force sufficiently large to require a written record of payments and tasks. There may also be a distinction in the record keeping of tenant farmers and owner occupiers, but we have made no attempt to divide the two categories, partly because by the nineteenth century many owner occupiers rented additional land to supplement their holdings.

III

Having established the survival of a body of material we need now to ask whether it will provide the data to answer the questions posed earlier in this paper. Collins suggested that farm accounts would provide evidence relating to a whole series of subjects:

the levels of farm output, receipts, expenditure, profits and investment; the influence of price movements on individual farming systems; the ways in which farmers raised capital and in more prosperous times how they invested it; crop and milk yields; lambing and calving rates; the size of the wool clip and livestock weights; innovations in crop variety, animal breeds, farming techniques and implements; rotations and land utilization; land reclamation and enclosure; and marketing methods.²³

This is an ambitious list, and on closer inspection it seems unlikely that all or indeed most of these suggestions can be examined on anything greater than a long-term local scale, or perhaps a short-term

²³ Collins, 'Historical farm records', p 145.

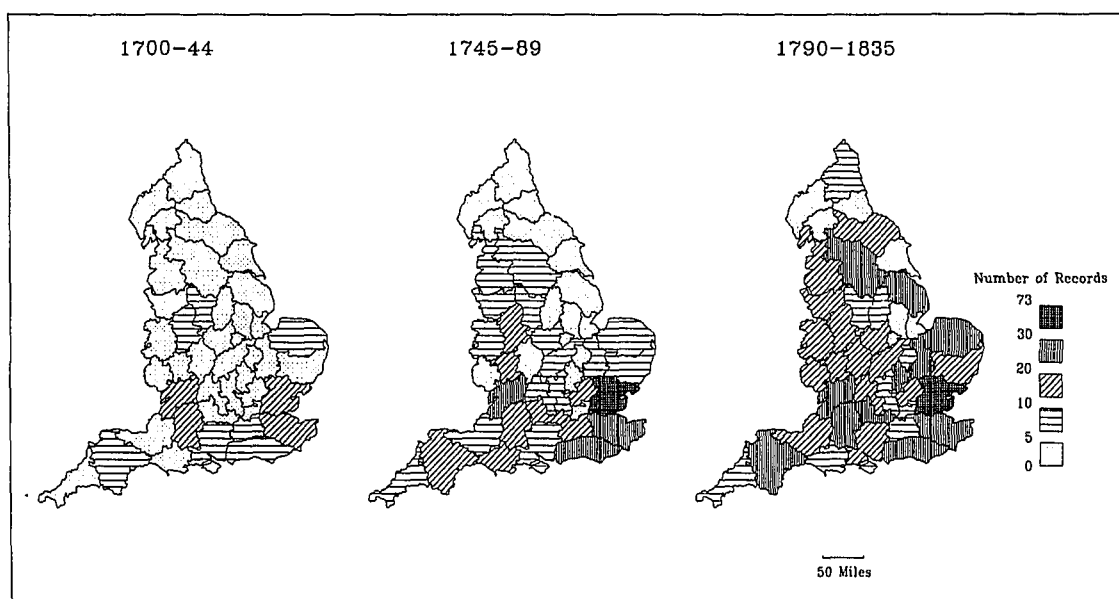


FIGURE 1

Distribution of farm records (Records held at Reading University Library and calendared at the Rural History Centre and the NRA).

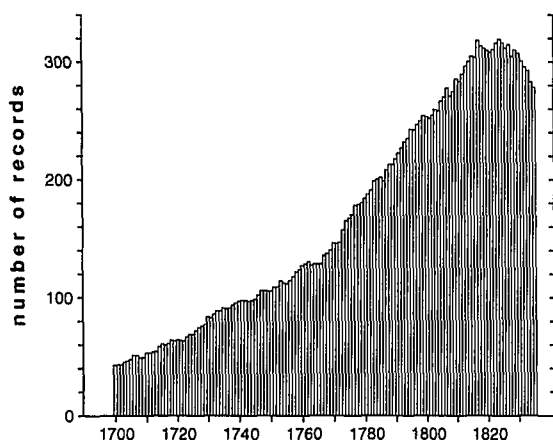


FIGURE 2

Chronology of surviving farm records.

regional scale. It seems highly unlikely, for example, that a long-run annual series of corn yields will be forthcoming for the eighteenth century. Yet an annual series, whilst perhaps the ideal, is not the only way to review change over time. Further research may yet identify significant geographical cross-sectional bunching of farm records in narrow periods, which if inter-

spersed reasonably regularly will serve the same purpose.

We are sceptical, also, as to the possibility of being able on any large scale to relate yields to specific farming systems and soils. In any case, and especially prior to the nineteenth century, we have to take into account considerations of local measurements, and to remember that the bushel – in which most yields were given – is a volumetric measure, often of uncertain size.

Bushel weights could vary from year to year as a result of seasonal factors, manuring treatments, variety of seed, soil types, and other considerations. Without bushel weight data, and thus an indication of the food value of the grain, accurate assessment of true yield is difficult. The extant 1801 crop returns make it perfectly clear that a number of different measures of crop yield were in place, some of which were local. Crops were variously measured in bushels, quarters, measures, sheaves, strikes, sacks, loads, bolls, bags, gallons, pecks, coombs,

seams, thraves, tons, and combinations of these measures. In making their returns, some incumbents were careful to specify which bushel they were using. In both Cornwall and Cumberland, for example, incumbents specified Winchester bushels to distinguish from the local bushel which was worth three Winchesters. In some east of England parishes the produce was reported in coombs which were equal to four Winchester bushels, and in Bedlington in Northumberland it was reported that a boll was worth two Winchester bushels and a stook was worth twelve sheaves. Not only were there many ways to report yields, but those yields as volume measures could vary from year to year in terms of weight. At Aycliffe in Durham, the wheat produced from 17 to 25 stooks per acre, but each stook varied from 3.5 to 5 pecks. In the Norfolk parish of Northwold a bushel of wheat weighed 63 pounds in 1801 but in Tipton in Staffordshire the 'same' bushel weighed 70 pounds.²⁴

Included in the shopping list drawn up by Collins are items suggesting that the records will include evidence of farm inputs, although the list concentrates more on outputs. Armed with both inputs and outputs it should be just a short step to measures of productivity, although to claim this on any large scale will exaggerate the richness of these data. For example, farmers' profits and productivity will be largely meaningless without information on the (uncosted) labour of the farmer himself and that of his family, and on the capital employed, both in terms of owned land and buildings and in stock and equipment as well as rented land. Only for individual farms are we likely to be able to obtain information on capital employed and its distribution between farmer and landlord, while in a long-run series we have to be aware of possible changes in the precise

delineation of the farm for which calculations of productivity and profit might be possible. Cross references to estate records may be appropriate.

Despite these provisos it is our belief that it is possible to push forward knowledge of the business of farming. Consequently, armed with our general appraisal of the survival of farm records we conducted a sensitivity analysis of a sample of the records. For this purpose we began by using the record collection at Reading (Reading Library). A standardized pro forma was developed to record the types of material in the records. Since the Reading Collection was skewed towards southern England, we also sampled a number of collections identified through the Rural History Calendar and the NRA Index. Approximately 160 collections in archives from fifteen regional or county areas were surveyed. The results of this sample survey are summarized in Table 3 and graphed by category of records in Figure 3.

On the basis of our search through the Reading Library collection, and the survey of collections across the country, we can give some idea of what findings emerge. A relatively small number of records gave direct evidence on agricultural output in the form of arable crop yields. Specific data on arable yields were found for West Sussex (1751-1831), East Sussex (1726-1791), Durham (1824-36), Lindsey (1810-14), Kesteven (1826-35), Middlesex (1817-29), Leicestershire (1817), Kent (1813-20), Hampshire (1786-1835), and Berkshire (1808-22).²⁵ The data are insufficient to calculate a national yield, but they could form the basis for more detailed examination of comparative output across space and through time.

Furthermore, a more systematic working

²⁴ M E Turner, *Home Office Acreage Returns (HO67), List and Index Society*, vols 189, 190, 195, HMSO, 1982, 1983.

²⁵ Reading University Library, P 247, P 323, P 285, P 322; LEI 4/1/1-2; KEN 4/5/1; HAN 11/1/1 and 11/2/1; Lincolnshire Archives Office, 2 T d'E/d/6; Durham Record Office, D/Ph/61/1; East Sussex Record Office, HOOK 16/2-3; West Sussex Record Office, MP 1477.

TABLE 3
Sensitivity analysis of a sample of 160 farm records

<i>Category</i>	<i>Items</i>		<i>Number of references</i>
<i>Output</i>	Arable	yield	8
		area	37
		quantity	32
	Livestock	age	31
		weight	21
		condition	28
		destination/origin	18
		numbers	26
		reproduction	13
	Others	milk	1
		butter	2
		cheese	0
		wool	10
<i>Inputs</i>	Arable	seeds	13
		manures	11
		buildings	3
	Livestock	feeds	8
		buildings	2
<i>Prices</i>	Crops		70
	Livestock		62
	Other products		43
	Rents/rates		50
	Labour		82
	Inputs		38
<i>Labour Productivity</i>			20
<i>Profitability of Farm</i>			14
<i>Innovation</i>	Rotations		19
	Crops		34
	Livestock breeds		12
	Fertilizers		4
<i>Anecdotal information</i>			42

of a complete archive may yet provide sufficient material to produce other yield series. For example, well-kept labour books provide sufficient detail to calculate yield from major corn crops. These records were generally the best kept and most complete of all farm records. Often they will provide the acreage harvested and the quantities of individual grains threshed. From this information it is simple to calculate yield, and because the figures were being used to calculate payments to the labourer the calculations for area of land and quantity of produce will generally have been accurate.

A number of other possible fields for investigation of the more neglected agricultural sector, livestock production, can be explored. Livestock weights, usually for animals ready for slaughter, were found from Cornwall to Durham, and from Cumberland to Sussex. The wide geographical coverage of the survey has provided examples of animal husbandry at each stage of production from birth to eventual slaughter. In 1699 the farmer at Ruffins Hill Farm, Burmarsh, Kent, achieved a weaning rate of over 8 lambs per 10 ewes. In the November of that year

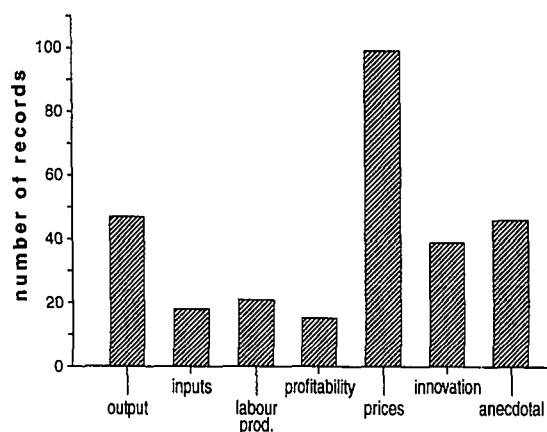


FIGURE 3

Type of data available from a sample of farm records (There are some slight discrepancies in numbers between this figure and Table 3. This discordance arises because the output records refer to arable and livestock outputs, and to yield estimates. Some records give both outputs and yields, but others refer only to one or the other).

he sold 998 lambs bred from his 1243 ewes, 380 of which were in the breeding flock for the first time. At that time these lambs were valued at 5s each. The ewes were worth 10s and the rams 12s.²⁶ At Stow-on-the-Wold, Gloucestershire, in March 1824 seven cows produced an average of 5.25 gallons of milk daily.²⁷

The movement of livestock from breeding and store regions to fattening farms and finally to slaughter provides the link in the various regional production networks. Joshua Ellis Junior of Beaumont Leys Farm in Leicestershire purchased cattle for grazing and then sold them fat the following year. In the autumn of 1817 he purchased two Welsh bullocks at £6 17s 6d per head, as well as cows, calves, and heifers at Loughborough and Leicester markets. The following year he sold two Welsh bullocks in London at £14 10s per head. He also

sold a number of the other cattle with a similar mark-up.²⁸

The records from Cotton Hill Farm, Bridgnorth, Shropshire, provide greater detail of the sales of fat cattle. In March 1762 a fat cow was killed. The meat weighed 502 lbs of which 48 lbs was fat and 77 lbs was hide, together with an unspecified amount of other offal. The farmer received £4 14s ½d for the meat, and a total of £6 10s 6d for the entire animal.

From some accounts details of the proportion of grain produced on the farm and fed to livestock can also be calculated. It is precisely this conjunction of inputs with outputs which will be vital if we are ever able to approach questions of, or even determine, overall productivity and business efficiency. On Torf Hill Farm in Rudby in the North Riding of Yorkshire in December 1823, 55 bushels of barley were winnowed for sale while 43 bushels were used for pig feed. On the same farm oats were fed to pigs, draught horses, mares and foals, fat cattle, cows, and sheep.

The reconstruction of accounts to explore the profitability of a farm should be possible for a broad span of time and over a wide area of England. Accounts which display this potential were found for Surrey, Cornwall, West and East Sussex, Cumberland, Northumberland, Durham, Holland and Lindsey in Lincolnshire. However, farmers were not always consciously profit takers in a modern business sense; indeed, relatively few seem to have kept formal accounts, so that the records which survive are likely to have been compiled by men and women with a reasonably business-like outlook and an education sufficient to provide numerical and literary skills. Our sensitivity analysis shows that a number of accounts were kept in such a way that it is a simple task to calculate crude

²⁶ Examples in this and the following three paragraphs come from Reading University Library, KEN 19/1/1; GLO 1/2/3; LEI 4/1/2; SAL 5/1/1; YOR 10/1/1.

²⁷ One of the anonymous referees pointed out that Gloucestershire cows producing so much milk in March must have been artificially fed since Cotswold grass would not have been sufficiently advanced so early in the year. Issues of this nature will require fuller analysis of the records, particularly of inputs.

²⁸ There are glimpses of the way farm records reveal the workings of the Welsh cattle trade in R. J. Colyer, *The Welsh Cattle Drivers: Agriculture and the Welsh Cattle Trade before and during the Nineteenth Century*, Cardiff, 1976.

profitability by simply subtracting annual expenditure from annual income. A farmer at Ardington and Lockinge, Berkshire, calculated his income in 1696 at £315 10s 2d and his expenditure at £88 15s 8d, leaving a substantial income over expenditure of £226 14s 6d. In 1753 at Bridgnorth, Shropshire, a farmer earned £459 5s 11d and spent £451 8s 5d leaving a modest income over expenditure of £7 17s 6d.²⁹ The concept of 'profit' was rather different from its modern business meaning, especially in the eighteenth century, hence our more cautious phraseology of crude profitability and 'income over expenditure'.

IV

Although we are confident that we have identified the great majority of the surviving records, and the categories in which similar records may be found on closer investigation, we are not certain that we will be able to answer the questions posed by O'Brien at least in the form we and he might like. Farm records can of course be much more systematically exploited by creating standard sets of categories – inputs, repairs, rent/rates, wage rates, sales, and so on – which can then be applied to each set of accounts. As Table 3 and Figure 3 show, the type of data recorded varies considerably, which makes such manipulation difficult. Yet while this exercise would be time consuming, it could provide the basis for a useful comparison of farming enterprises both geographically and temporally. From the accounts it would also be possible to create a series of farm-gate prices which could then be compared with national wholesale prices already collected. Labour productivity data are available for Surrey, Middlesex, Cornwall, East Sussex, Lancashire, Cumberland, and Northumberland and could provide much needed information for extending productivity studies already available from land

productivity measures, and soon to be augmented by research under way on land rents.³⁰ Of course, we would have to be aware that the productivity of a farm was not only a reflection of the farmer, as well as the type of land and proximity of markets, but also of the landlord. The willingness of the latter to encourage his tenants, to put capital into the holding, and to use the institutional framework of estate management to bring about improvement can certainly not be overlooked.

Finally, it is possible to glean data on innovation and changing practices from a number of the accounts. Although this may be peripheral to the wider questions, noting the key changes – new crop introduction, new livestock breeds, new uses of inputs, changes in rotations – adds colour to the whole business and development of farming.

Taken together the material is sufficiently comprehensive for us to say a great deal about farmers, their budgets, and the output from their farms. We have hinted at the type of material available, but it will require considerable resources if agricultural historians are to begin to fill the eighteenth-century black hole. O'Brien was right in pointing to the gap, and our analogy of a black hole is apt. In cosmological terms a black hole is full of matter which cannot escape because of gravitational forces. What we have tried to show here is that the black hole of the eighteenth century is indeed full of matter, but that releasing it will not be easy. We are also aware that what we may eventually find will not necessarily be of the same quality as the results which have been achieved for the early modern period. Yet we believe the task of bridging the long eighteenth century is worthwhile, and that there is at least the beginnings of a substantial and relatively untapped database with which to make the attempt.

³⁰ M E Turner, J V Beckett, and B A Afton, ESRC project R000232415, *Agricultural Rent in England, 1700–1914, Final Report*.

²⁹ Reading University Library, BER 43/2/1; SAL 5/1/2.