

## **Agricultural Revolution in England: the Transformation of the Agrarian Economy 1500- 1850.**

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Gordon Mingay

This new study of the agricultural revolution is clearly the product of many years of study and research. It is closely argued, liberally illustrated with figures and tables, and tersely written and remarkably compressed. Intended primarily for students, it will repay careful reading, and re-reading, by teachers as well as students of the subject.

The book's thesis is supported at numerous points by statistical material gathered from a number of sources, but at the core of the argument stand the key figures of output and productivity. There are three tables of estimates of the agricultural output of England, one based on the growth of population numbers and allowing for net imports, the second on the assumed demand of this population taking account of the movements in prices and wages, and the third on contemporary estimates and modern guesses of the value of output at different periods. Surprisingly, over the period 1700-1831/1851 the results are not hugely different, but the important point is that all show a very substantial growth in output to have occurred in the course of the later eighteenth century and first half of the nineteenth century. The estimates based on population numbers go back much further in time and suggest that while between 1520 and 1651 there was a considerable growth of output (when it rather more than doubled), there then followed a lengthy static period of very little or no growth until well into the eighteenth century. This, however, conflicts with the demand-based estimates which show a growth of output of as much as 43 per cent occurring between 1700 and 1760.

These discrepancies apart, output is one matter, of course (as Professor Overton points out), and productivity another. The first can be achieved merely by bringing additional resources into play, while the second depends on advances in the modes of exploiting existing resources of land, livestock and labour. It is therefore to a rise in productivity, and the causes of it, that the argument for an agricultural revolution must look. For lack of adequate source materials the rise in livestock productivity cannot be properly charted, although the author concludes that there were considerable advances well before the later eighteenth century, in the hundred years following 1660. It is possible, however, to produce figures for the productivity of land which suggest that this more than doubled between 1700 and 1850, with the larger part of the increase coming after 1800. Figures for cereal yields also point to the eighteenth century as the era of breakthrough, with only a slow improvement in the yields occurring before 1700, and a major improvement in the following half-century. The productivity of labour showed a sustained rise from at least 1700, as a result, it is believed, of the gradual substitution of horse for human power, an increase in the size of farms which made for the more economical use of labour, the development of better hand tools, and from the middle nineteenth century the mechanisation of more farming operations.

Further figures indicate that over the period 1700 - 1850 it may be concluded that, in general, output rose by some 170 -180 per cent on a total farm area that had risen by only one third; the productivity of land had rather more than doubled, cereal yields rose two and a half times, and the productivity of labour roughly doubled.

What explanation is there for this revival of the eighteenth and first half of the nineteenth centuries as the crucible of agricultural revolution ? As we have long known, there were already in 1700 a variety of advances in the improvement of pastures and the growing of new fodder crops, some of the innovations going back well before 1660, but Professor Overton puts his main emphasis on the spread after 1750 of the growing of fodder crops on a large scale as the key to technical change. He bases this argument, in part, on the research carried out by B.M.S. Campbell and himself into Norfolk farming, where it was found that the production of legumes made no advance over medieval levels, in terms of sown area, until some time between 1739 and 1836, while clover and turnips, not grown at all previously, occupied between them nine per cent of the sown area in 1660-1739, and as much as 49 per cent by 1836.

The spread in Norfolk and else where of the 'new' fodder crops resulted, as it is well known, in the reduction of land lying fallow and a big injection of nitrogen into the soil. These advances were encouraged by a number of accompanying developments, most notably the growth of the market for agricultural produce and a variety of institutional changes involving the spread of leasehold tenures and the sweeping away of common fields and common rights. Enclosure, in particular, made for greater flexibility in land use while the institution of sole occupation of land over a larger proportion of the farmland, enabled farmers to be more readily responsive to shifts in markets and prices. p> The extent to which markets expanded may be judged more clearly now than in the past by resort to E.A. Wrigley's 1985 figures for the non- agricultural population, both urban and rural (reprinted by Professor Overton). These indicate that the non- agricultural population rose from under a quarter of the whole in 1520 to as much as 45 per cent by 1700, and to as high as nearly 64 per cent by 1801. In consequence, the numbers of landholders farming primarily for subsistence and selling relatively little produce in the markets (estimated at 80 per cent of the total in 1520) must have fallen gradually to a much lower level. By the eighteenth century market forces, together with institutional changes in landowning and land tenure, had brought into being an agricultural system dominated by farms that had grown in average size and were mainly occupied by landlord' s tenants concerned with producing for the market. Although the small freeholders may have declined, there still remained, in addition to the tenants of landed estates, numbers of larger freeholders, and if we may believe Arthur Young, these substantial independent cultivators were among the most progressive farmers of his time.

The growth of the market, as delineated above, appears to pose something of a problem of timing for Professor Overton's mid-eighteenth- century technical breakthrough. According to Wrigley's figures the non- agricultural population was already nearly a half of the total in 1700, and as a proportion of the whole had grown by some 90 per cent since 1520. The total population itself, of course, is estimated by Wrigley and

Schofield to have been very much larger in 1700 (at just over 5 million) than in 1520 (2.4 million), so that with the growth of the non- agricultural numbers the food market of 1700 must have been very greatly in excess of that available to farmers at the earlier date. If the market were a key factor in agricultural expansion, as must be supposed, it seems strange in the circumstances that the great leap forward in agricultural output and productivity should have been delayed until after 1750, and in fact until mainly after 1800, the more especially as the accompanying institutional factors were already in train before 1700. The figure for cereal yields and the demand- based output estimates, quoted above, do suggest in fact that considerable progress was being made already in the first half of the eighteenth century.

Of course, the rise in the numbers of the English population, of nearly three million in the fifty years between 1751 and 1801, is larger than the overall rise of the whole two centuries between 1551 and 1751; and the growth of numbers after 1801 totally dwarfed all previous experience. However, prior to the bad seasons of the French Wars period the effects on prices of the expansion of the market were not very clear or pronounced. And given contemporary doubts whether the population was growing or not, farmers would have been fool-hardy to gamble on a long sustained increase in price levels.

Professor Overton recognises of course that important changes in agriculture did occur before 1700, especially in regard to the improvement of livestock production, but these changes, he considers, cannot compare in terms of output and productivity with those flowing from the spread after 1750 of fodder crops: these made for more intensive farming, a reduction in land lying fallow, and "a massive increase in the supply of nitrogen to farmland". On the contrary, he argues, the ploughing up of the pastures in the earlier period can be interpreted as "a desperate attempt by farmers to cash in on reserves of nitrogen to produce as much grain as possible in the face of overwhelming demand.... Kerridge's arguments are not persuasive.... " "Coupled with evidence of wide-spread reclamation and the halt to population growth in the mid-seventeenth century this period is more suggestive of a Malthusian check than agricultural triumph."

However, the timing of the post-1750 revolution based on the widespread use of the fodder crops, Professor Overton accepts, is difficult to explain. Farmers no doubt became more sensitive to market prices but there is no evidence that they were aware of long-term price trends. Furthermore, it might be urged, a limited expectation of life (which made some eighteenth-century farmers reluctant to take up long leases) and the prevalence of natural setbacks to production caused by pests and disease combined to make farmers adopt a foreshortened outlook towards the future. Seventeenth-century farmers' early experiments with clover and turnips, Professor Overton thinks, may have had more to do with attempts to safeguard supplies of fodder than with appreciation of their potential to raise productivity, while the attraction of clover may have been its ability to form a ley more quickly and more reliably than by using other means. The role of these crops in raising yields may have been "unintended consequences of the initial innovation in the late seventeenth century" rather than a rational response to the unfavourable price movements of the period.

In his conclusion Professor Overton recognises that changing attitude among occupiers towards the business of farming was as significant as changes in prices and costs in determining agricultural progress. Prior to the eighteenth century there had always been some large-scale farming for the market, of course, especially in regard to livestock; and there were also some farmers who kept careful records and adopted a pragmatic, innovative approach towards their livelihood. This kind of farmer became rather more common in the eighteenth century, especially among the bigger freeholders and tenants of the larger farms which some landlords were gradually creating by a deliberate policy of transferring additional land into the hands of more capable men. No doubt the division remarked upon by Arthur Young between the enlightened large farmers and the benighted small ones, though no doubt exaggerated and over- simplified, had some substance in fact. The spread of more efficient farming was a long process, of course, and still had a long way to go even in 1850, as Caird's strictures remind us, and many fairly simple and obvious means of reducing costs and improving output were slow to be adopted. Among dairy farmers, for instance, the introduction of milk recording in order to identify and remove the low-producing cows was quite exceptional before 1920 and developed in earnest only after 1950.

Another aspect of the pre-1850 changes which deserves more attention is that of capital supply and

investment. Landlords' investment in creating larger farms and in enclosure, with associated expenditures on land reclamation, drainage, and new farm buildings, was clearly substantial, as was farmers' investment in improved livestock, better implements, and carts and wagons, as well, often enough, as a share of the costs of land reclamation and drainage. The mechanism by which the involved were diverted from landlords' rentals and farmers' profits, and the role of banks and of the informal network of local lenders and borrowers, still remains little explored for the period of crucial agricultural change. And, of course, as Professor Overton notes, one major weakness of contemporary farming, the losses caused by pests and disease to both crops and livestock, remained unremedied until well after 1850

To repeat, *Agricultural Revolution in England* is a compact study primarily intended for students, and some of the material is presented at an elementary level. Much of it, however is not, and probably the finer points of Professor Overton's complex analysis can be appreciated and assessed only by those with some considerable background in the subject. This applies particularly to the controversies surrounding Brenner's argument on the development of agrarian capitalism, and to Kerridge's "early agricultural revolution" which are considered in very summary terms, but applies also elsewhere, for example in considering the effects of enclosure. It may be that the author decided to err on the side of brevity but there is something to be said for more extended discussions, especially in a book intended for students. The summary approach has also led to errors at a few points (e.g. the statement on p.176 that "small farmers", rather than small owners, had to sell land in order to finance enclosure - an important distinction often misunderstood by students - and the exaggeration of the effects of the New Poor Law on p.187). More serious is the lack of references to the text. True, sources for the tables are given, and there are, nevertheless, statements in the text for which one would like to have chapter and verse.

These are minor blemishes on a study that is important not only for its forthright, statistics-based arguments, but also for the collected statistics themselves, which indeed make it an invaluable work of reference. It is an achievement in which the author may justly take pride.

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[2]

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