ECO 303Y1

Economic History of Modern Europe to 1914

Topic No. 4 [8]:

Labour and The Enclosures of the Industrial Revolution Era in England:
The Social Costs of Agricultural Modernization, ca. 1760 - 1830

READINGS: Within each of the following sections, all readings are listed in the chronological order of original publication, when that can be ascertained. The more important are indicated by asterisks *.

A. Enclosures and ‘Depopulation’: Expropriation, Dispossession, and the Labour Supply in the Past and Current Debate. See also Section E, below.


   See Chapters 1 - 4, and 10 - 11 (all short), but especially Chapter 4, ‘The Village After Enclosure’, pp. 73-81. This is perhaps the most eloquent expression of Fabian socialist interpretation of the agrarian changes during the Industrial Revolution era, indeed the classic socialist (if not truly Marxist) study of Enclosure. But, in view of so much subsequent research on this question since the 1911 publication, and in view of their obvious biases, read also Turner and Chambers or some other modern study as well.


This study remains the modern classic conservative or anti-Marxist view of the Enclosure Movements; but read at least one of the socialist/Marxist interpretations of Enclosure before you come to any firm conclusions.


   a) W. E. Minchinton, ed., *Essays in Agrarian History*, Vol. II (1968), pp. 9-28; and also


He contends that the chief period during which the ‘small farmer’ (as owner-occupier) was squeezed out, the period during which their numbers dwindled most rapidly, was the century prior to the Industrial Revolution. But that is an issue different from the dispossession of tenant-farmers (i.e. peasants) operating within an open-field regime of farming. See also his critique of the Hammonds in Mingay (1963).


This is a social history of the famous English agricultural uprising of 1830, ‘The Last Labourers' Revolt.’ See also section C, below.


This is largely, though not entirely, on the earlier Tudor-Stuart Enclosures; but their model can be applicable to the Industrial Revolution era as well.\(^1\)


---

\(^1\) Note: their attack on some old, traditional views linking the Tudor enclosures with the cloth trade boom of the later 15th and 16th centuries is seriously undermined by two critical faults: an unrepresentative series of wool prices (for the bishopric of Durham, unrelated to the areas enclosed in the Midlands) and by a faulty econometric model.
(a) E.L. Jones, ‘Agriculture, 1700-80’, pp. 66-86.

(b) Glen Hueckel, ‘Agriculture during Industrialization’, pp. 182-203.


46.


a) George Grantham, ‘General Introduction.’


68. Joyce Burnette, “Labourers at the Oakes: Changes in the Demand for Female Day-Laborers at a Farm Near Sheffield during the Agricultural Revolution,” Journal of Economic


87. Joyce Burnette, ‘Married with Children: the Family Status of Female Day-Labourers at Two South-Western Farms’, Agricultural History Review, 55:i (2007), 75.94. Concerns the 19th century,


   b) Lord Ernle, ‘Obstacles to Progress’, pp. 49-65. [Reprinted from his The Land and its People (London: Hutchinson, 1925), chapter III.]


25. Michael Turner, ‘Parliamentary Enclosure and Landownership Change in
A most provocative thesis on English enclosures, contending that the major period
of enclosures was not the Tudor era of the late 15th and 16th centuries, nor the
Industrial Revolution era of the 18th, early 19th centuries, but the ‘in between’
period of the 17th century -- traditionally viewed as an era of few enclosures.

J. R. Wordie, ‘The Chronology of English Enclosure: A Reply’, both in

** 41. Michael Turner, Enclosures in Britain, 1750 - 1830 (Studies in Economic History Series,
London, 1984), sections 1 - 4, pp. 11 - 63.


44. Brinley Thomas, ‘Food Supply in the United Kingdom during the Industrial Revolution’, in
Joel Mokyr, ed., The Economics of the Industrial Revolution (London: George


46. David Grigg, ‘Farm Size in England and Wales, from Early Victorian Times to the Present’,

Explorations in Economic History, 27 (July 1990), 350-55.

Explorations in Economic History, 27 (July 1990), 356-62.

Studies in Population, Economy, and Society in Past Time no. 11 (Cambridge


51. Eric Kerridge, The Common Fields of England (Manchester: Manchester University Press,

52. Robert C. Allen, Enclosure and the Yeoman: The Agricultural Development of the South


* 82. Simonetta Cavaciocchi, ed., *Il mercato della terra, secoli XIII - XVIII*, Istituto internazionale di storia economica “F. Datini” Prato, Serie II: Atti delle ‘Settimane di Studi’ et altri convegno no. 35 (Florence: Le Monnier, 2004). See the following essays, in particular:
   a) Bas van Bavel, ‘The Land Market in the North Sea Area in a Comparative Perspective, 13th -18th Centuries’, pp. 119-46.


C. *The Agricultural Revolution* of 1650-1840: Enclosures and Technological Change

I. **Textbook Surveys of Agrarian Change and Industrialization:**

Vol. II (1932), Chapter 7.


II. *More Specialized Studies on England (and Great Britain, from 1707)*:


(a) A.H. John, ‘Farming in Wartime, 1793-1815’, pp. 28-47.

(b) D.C. Barnett, ‘Allotments and Problem of Rural Poverty’, 162-86.


b) Lord Ernle, ‘Obstacles to Progress’, pp. 49-65. [Reprinted from his *The Land and its People* (London: Hutchinson, 1925), chapter III.]


(a) E.L. Jones, ‘Agriculture, 1700-80’, pp. 66-86.


   (a) Peter Bowden, ‘Agricultural Prices, Wages, Farm Profits, and Rents’, pp. 1 - 118.


background to the post-1650 changes.


(c) B.A. Holderness, ‘Prices, Productivity, and Output’, pp. 84-189.


(m) A.H. John, ‘Statistical Appendix’, pp. 972 - 1155.


86. Andrew K. Copus, ‘Changing Markets and the Development of Sheep Breeds in Southern


(a) George Grantham, ‘General Introduction.’


* (d) Robert Allen, ‘Enclosure and Agricultural Productivity, 1750 - 1850.’


Part I: Enclosures, Tenure, and Organization of Capital in Britain and Europe. Section ii: European Agriculture during Industrialization: Crises and Adjustments.

(a) F.M.L. Thompson, ‘Rural Society and Agricultural Change in Nineteenth-Century Britain.’

(b) E.J.T. Collins, ‘The ‘Machinery Question’ in English Agriculture in the Nineteenth Century.’


of International and Intersectoral Productivity Differences’, *Journal of European Economic History*, 19 (Spring 1990), 91 - 115.


a) Mark Overton and Bruce Campbell, ‘Productivity Change in European Agricultural Development’, pp. 1 - 50.


111. Paul Brassley, ‘Silage in Britain: The Delayed Adoption of an Innovation’, *Agricultural History Review*. 


116. Bas J. P. Van Bavel and Erik Thoen, eds., *Land Productivity and Agro-Systems in the North Sea Area: Middle Ages - 20th Century: Elements for Comparison*, CORN Publication Series 2: Comparative Rural History of the North Sea Area (Turnhout: Brepols, 1999). In this collection, see the following essays, relevant to the British economy.


134. Richard W. Hoyle, ed., *People, Landscape and Alternative Agriculture: Essays for Joan*

g) Joan Broad, ‘Regional Perspectives and Variations in English Dairying, 1650-1850’, pp. 93-112.


139. Mary Young, ‘Scottish Crop Yields in the Second Half of the Seventeenth Century: Evidence from Mains of Castle Lyon in the Carse of Gowrie,’ Agricultural History


i) Gérard Béaur, ‘Alternative Agriculture or Agricultural Specialization in Early
Modern France?”, pp. 121-37.


147. David S. Johnson, Liming and Agriculture in the Central Pennines: The Use of Lime in Land Improvement from the Late Thirteenth Century to ca. 1900, Bar, British Series no. 525 (2010).


D. Agrarian Social History: I
**Other Studies on Landownership, Landlords, and Tenants, in 18th- and 19th-Century Britain:**


See also the following comment: F.M.L. Thompson, ‘A Terminological Confusion Confounded’, p. 311.


27. J. P. Cooper, ‘In Search of Agrarian Capitalism’, *Past and Present*, No. 80 (Aug. 1978), 20-65. An attack on Brenner, one of many (but the one most relevant to this topic).


   
   a) J. B. Beckett, ‘Landownership and Estate Management’, pp. 545 -639, and:
   


51. Christine Hallas, Rural Responses to Industrialization: the North Yorkshire Pennines, 1790 - 1914 (Bern: Peter Lang, 1999).


E. **Agrarian Social History**

II: *Agricultural Labourers, Rural Poverty, and the Poor Law in the 18th and 19th centuries.*

See also Section A, above.


   (b) W. A. Armstrong and J. P. Huzel, ‘Labour II: Food, Shelter and Self-Help, the Poor Law, and the Position of the Labourer in Rural Society’, pp. 729 - 835.


62. Robert C. Allen, Enclosure and the Yeoman: the Agricultural Development of the South


* 76. Nicola Verdon, ‘The Rural Labour Market in the Early Nineteenth Century: Women’s and


|   | 103. Joyce Burnette, ‘Child Day-Labourers in Agriculture: Evidence from Farm Accounts, 1740-
F. **Common or Open Fields: Further Readings**


10. M.A. Havinden, ‘Agricultural Progress in Open-Field Oxfordshire’, *Agricultural History Review*, 9 (1961), 73-83. An important article for demonstrating that open fields did not necessarily prove to be a barrier to change, at least in early-modern England. Also in:


** 27. William N. Parker and Eric L. Jones, eds., *European Peasants and Their Markets: Essays in Agrarian Economic History* (Princeton, 1975). See the following essays:


* d) Jon Cohen and Martin Weitzman, ‘Enclosure and Depopulation: a Marxian Analysis’, pp. 161-76. See also the following:


* 35. Michael Mazur, ‘The Dispersion of Holdings in the Open Fields: An Interpretation in Terms


* 39. Carl J. Dahlman, The Open Field System and Beyond: A Property Rights Analysis of an Economic Institution (Cambridge, 1980). A very major recent contribution to this debate, providing a viable economic alternative to the McCloskey model.


   b) H. S. A. Fox, ‘Approaches to the Adoption of the Midland System’, pp. 64 - 111.

   ** c) Bruce Campbell, ‘Commonfield Origins: The Regional Dimension’, pp. 112-29. Very important contribution, linking communal open fields to manorialism.

   d) Robert Dodgshon, ‘The Interpretation of Subdivided Fields: A Study in Private or Communal Interests?’ pp. 130-44.


44. Alan Nash, ‘The Size of Open Field Strips: A Reinterpretation’, The Agricultural History


QUESTIONS FOR DISCUSSION:

1. Did Enclosures necessarily mean displacement and ‘depopulation’ of small farmers -- both tenants and smallholder owner-occupiers? Did Enclosures and the subsequent agrarian changes, from ca. 1750 to ca. 1850, mean an absolute or relative decrease in the numbers of people engaged in the agricultural sector?

2. Agriculture and the Labour Supply: what became of those small farmers who were dispossessed, displaced by Enclosures and subsequent agrarian changes, ca. 1750 - ca. 1850? Consider in terms of the following questions:

   (a) Did Enclosures create an industrial proletariat or an agricultural proletariat, or a mixture of the two?

   (b) If the absolute number of those engaged in the agricultural sector did not fall (before 1850), was the chief (social) significance of Enclosures the change in property rights and social ties to the land? Did many of those, formerly tenants in open-field farming or small holder owner-occupiers, become hired field-hands on large, enclosed commercial farms?

   (c) How many of those small farmers dispossessed, bought out, or otherwise encouraged to leave their holdings became a source of labour for urban industries -- or rural industries? Were those industrial workers of agrarian origins driven into or attracted into their new industrial employment? Were they compelled to become industrial workers by having their holdings expropriated; or were many poor farmers and field-hands lured into industrial employment by the prospect of higher wages?

   (d) Where did the industries, rural and urban, of the Industrial Revolution era secure their labour supplies? From displaced farmers, the victims of Enclosure; from the younger sons of continuing farmers, younger sons no longer needed on the land; from demographic growth -- from natural population increases, especially in the urban areas themselves?

3. What was the relationship between demographic growth, Enclosures and agrarian changes (agricultural growth), and industrial growth--urban industrialization in particular, from ca. 1750 to ca. 1850?

4. In the context of British economic development from ca. 1750 to ca. 1850, discuss the possible economic and social ‘benefits and costs’ of Enclosures for each of the following categories:

   (a) landlords and their tenants-in-chief;
   (b) freeholder or smallholder ‘owner-occupiers’;
   (c) freeholder tenants: both those who hired labour, and those who depended chiefly on the labour of their own family;
   (d) leaseholder tenants;
   (e) copyholders: by inheritance, for lives (one to three lives), at will;
   (f) cottars or cottagers;
   (g) hired agricultural labourers, field hands;
   (h) agricultural ‘servants’, hired on annual contracts and living and working as part of the farm family.
5. In the same context as the above question, discuss the changing economic and social ‘benefits and costs’ of the traditional open-field or common-field system of farming, especially for the peasant tenants of the manorial, or formerly manorial villages. Why did this system of landholding and farming persist for so long?

6. Did Parliamentary enclosures, ca. 1750 - ca. 1830, protect the rights of the tenants, any property rights of the tenants, any property rights at all? Who really paid for the costs of such enclosures (including the Enclosure Commissions' costs)?

7. What were the prime motives for and causes of the 18th century Enclosures? Discuss in terms of the following theories, comparing, contrasting, and if possible reconciling some of their elements:

   (a) the Marxian theories of expropriation: to capture the economic rent on land; to transfer income from the peasantry (smallholders and tenant farmers) to the landlords.

   (b) the demographic theories: a reorganization of landholdings and farming methods necessitated by the growing pressures of population--both of people and livestock: demographic pressures forcing a more rational allocation of resources in agriculture (land, labour, capital).

   (c) the market theories: that a combination of rising agricultural prices [see demographic theories in b], improved communications and transportation facilities, urbanization, and economic development in general promoted commercialized farming, which in turn induced Enclosures and agricultural improvements. Or more simply, and related to both (a) and (b), rising prices augmented the economic rent on existing productive lands and so encouraged landlords to enclose to capture such rising rents.

   (d) theories focusing on technology and productivity: that more enlightened, better educated landlords enclosed open-field lands and wastelands, etc. in order to implement more advanced farming techniques, placing land under single management (and thus necessarily enclosed) to ensure such implementation and ‘progress.’

Are all these theories necessarily exclusive or inconsistent with each other? In your discussion, try to determine (i.e. explain) both the timing and the location of the enclosures.

8. Compare and contrast both the economic and social consequences of enclosures that involved:

   (a) enclosures of pasture and woodlands of the village ‘commons’

   (b) enclosures of wastelands, or reclamations of fens and wastes

   (c) engrossing of the arable strips in the open-fields

   (d) enclosures principally for pastoral (livestock) farming or those for arable primarily, or those for ‘convertible husbandry’ (mixed farming).

9. Explain the regional differences in English enclosures: in the Midlands, in the south-west, the south-east, and the North; and the differences relating to England's ‘scarp and vale’ topography.
10. In what respects, both in terms of causes and of the consequences (economic and social), did the Enclosures of the Industrial Revolution era (ca. 1750-1830) resemble and/or differ from the earlier enclosures, especially those of the Tudor-Stuart era? How significant were the enclosures of the ‘in between’ period of the 17th century: how did they differ from the earlier and later enclosures in terms of causes and consequences (and forms). How much land remained to be enclosed by 1750?

11. Were enclosures of the Industrial Revolution era and the associated technical changes, where evident and relevant, designed more to economize on land or on labour? Over time, what changes occurred in the land:labour ratio? Explain those changes and their consequences.

12. Were Enclosures necessary -- a necessary co-requisite for modern industrialization, specifically in Great Britain?
Table 1.

The effects of changing relative areas of grass (livestock-pasture) and arable (grain crops) on the output of a 100-acre farm: in bushels per acre (with livestock output equivalents)

**Assumption:** Farm Operating on a Three-Field System with 2/3 in Crops and 1/3 Fallow (Uncultivated, Land at Rest) each Year

<table>
<thead>
<tr>
<th>Grass Area in Acres</th>
<th>Grain Area in Acres</th>
<th>Fallow Area (at Rest): Acres</th>
<th>Manure Tons per Acre Arable</th>
<th>Grain Yield: Bu. per Acre</th>
<th>Total Grain Output Bu.</th>
<th>Stock Output in Equiv Bu.*</th>
<th>TOTAL OUTPUT IN BU.</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>0.0</td>
<td>0.0</td>
<td></td>
<td></td>
<td>1,000</td>
<td>1,000</td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>13.3</td>
<td>6.7</td>
<td>&gt;10.0</td>
<td>27.5</td>
<td>366</td>
<td>800</td>
<td>1,166</td>
</tr>
<tr>
<td>77</td>
<td>15.3</td>
<td>7.7</td>
<td>10.0</td>
<td>27.5</td>
<td>421</td>
<td>770</td>
<td>1,191</td>
</tr>
<tr>
<td>60</td>
<td>26.7</td>
<td>13.3</td>
<td>4.5</td>
<td>16.5</td>
<td>441</td>
<td>600</td>
<td>1,041</td>
</tr>
<tr>
<td>40</td>
<td>40.0</td>
<td>20.0</td>
<td>2.0</td>
<td>11.5</td>
<td>460</td>
<td>400</td>
<td>860</td>
</tr>
<tr>
<td>20</td>
<td>53.3</td>
<td>26.7</td>
<td>0.7</td>
<td>8.9</td>
<td>474</td>
<td>200</td>
<td>674</td>
</tr>
<tr>
<td>0</td>
<td>66.7</td>
<td>33.3</td>
<td>0.0</td>
<td>7.5</td>
<td>500</td>
<td>0</td>
<td>500</td>
</tr>
</tbody>
</table>

* Assumption: That the output of livestock products is equivalent to 10 bushels of grain per acre.

Table 2.

Baltic and English grain export trades
average annual exports in quarters (of 8 bushels)*

1600-49 to 1700-49

<table>
<thead>
<tr>
<th>PERIOD</th>
<th>BALTIC**</th>
<th>ENGLAND</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1600-59</td>
<td>719,250</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>1650-99</td>
<td>585,900</td>
<td>26,250</td>
<td>612,150</td>
</tr>
<tr>
<td>1700-49</td>
<td>325,500</td>
<td>453,600</td>
<td>779,100</td>
</tr>
</tbody>
</table>

* 1 Quarter = 8 bushels = 64 gallons of grain = 480 lb. (1 bu. = 60 lb.; 6 x 80 = 480 lb.)

* about 80% on the seaborne Baltic grain exports, on average, was carried in Dutch ships (a higher proportion in the earlier than in the later periods).

Table 3.

Average annual English grain exports
in quarters (of 8 bushels), 1700-09 to 1760-64

<table>
<thead>
<tr>
<th>DECADE</th>
<th>GRAIN EXPORTS IN QUARTERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1700-09</td>
<td>283,000</td>
</tr>
<tr>
<td>1710-19</td>
<td>369,000</td>
</tr>
<tr>
<td>1720-29</td>
<td>426,000</td>
</tr>
<tr>
<td>1730-39</td>
<td>531,000</td>
</tr>
<tr>
<td>1740-49</td>
<td>661,000</td>
</tr>
<tr>
<td>1750-59</td>
<td>655,000</td>
</tr>
<tr>
<td>1760-64</td>
<td>746,000</td>
</tr>
</tbody>
</table>
Table 4.
Model of a three-course crop rotation system: arable lands

<table>
<thead>
<tr>
<th>Year</th>
<th>FIELDS: A</th>
<th>FIELDS: B</th>
<th>FIELDS: C</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>FALL (Winter)</td>
<td>SPRING (Summer)</td>
<td>FALLOW Resting Uncultivated</td>
</tr>
<tr>
<td></td>
<td>Wheat and/or Rye</td>
<td>Oats, Barley</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Legumes (Peas and</td>
<td>(Double Ploughed)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Beans)</td>
<td>livestock graze on natural</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>grasses</td>
</tr>
<tr>
<td>II</td>
<td>SPRING</td>
<td>FALLOW</td>
<td>FALL</td>
</tr>
<tr>
<td>III</td>
<td>FALLOW</td>
<td>FALL</td>
<td>SPRING</td>
</tr>
</tbody>
</table>
Table 5.
Convertible husbandry (‘up and down’ farming)

SECTION I: PASTURE LANDS FOR GRAZING LIVESTOCK

1) These lands, comprising about half of the farm holdings, are ‘laid down to grass’ for about five years, for pasturing livestock (sheep and/or cattle), allowing these lands to regain their fertility and store up large stocks of nitrogen. If the livestock are also ‘stall-fed’ -- i.e. from fodder crops outside the pasture -- their manure will add net amounts of nitrogen compounds to the soil.

2) After five or so years, these pasture lands are ‘ploughed up for arable’, to follow the five-course crop system indicated below for Section II (the other half of the farm holdings). After another five years, these lands, now arable, are again ‘laid down to grass’ to serve as pasture lands for the following five years.

SECTION II: THE ARABLE FIELDS (with no fallow): comprising the other half.

<table>
<thead>
<tr>
<th>ARABLE FIELD A:</th>
<th>WINTER GRAINS: Wheat and/or Rye grains</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARABLE FIELD B:</td>
<td>THE NEW LEGUMES: Clover, Alfalfa (Lucerne), and Sainfoin grasses (high nitrogen-fixing properties), as animal fodder crops</td>
</tr>
<tr>
<td>ARABLE FIELD C:</td>
<td>PULSES: Beans and Peas (low in nitrogen-fixing properties, for human consumption)</td>
</tr>
<tr>
<td>ARABLE FIELD D:</td>
<td>SUMMER GRAINS: Barley (for beer) and Oats (to feed both humans and horses)</td>
</tr>
<tr>
<td>ARABLE FIELD E:</td>
<td>OTHER NEW CROPS: Coleseed and Rapeseed (for both industrial oils and animal fodder); or Turnips (chiefly for animal fodder)</td>
</tr>
</tbody>
</table>

‘New’ Crops Grown Under Multiple Crop Rotations in Convertible Husbandry (or in ‘Norfolk Farming’): not new, but much more widely diffused in the 17th & 18th centuries.

Clover, Alfalfa (Lucerne), Sainfoin, Coleseed, Rapeseed, Flax, Buckwheat, Hops, Turnips

Nitrogen Fixing Properties of Various Legumes in kg per hectare (2.47 acres)

<table>
<thead>
<tr>
<th>Legume</th>
<th>Nitrogen Fixing Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beans and Peas (Pulses)</td>
<td>30 kg per hectare</td>
</tr>
<tr>
<td>Clover</td>
<td>100 kg per hectare</td>
</tr>
<tr>
<td>Sainfoin</td>
<td>170 kg per hectare</td>
</tr>
<tr>
<td>Alfalfa (Lucerne)</td>
<td>225 kg per hectare</td>
</tr>
</tbody>
</table>
Table 6.

British wheat prices: decennial averages of prices and price-relatives (indices) of wheat at Eton college, in shillings per quarter, from 1600 to 1819

Mean of 1700 - 09 = 100

<table>
<thead>
<tr>
<th>DECADE</th>
<th>PRICE</th>
<th>INDEX</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1700-09 = 100</td>
</tr>
<tr>
<td>1600-09</td>
<td>30.80</td>
<td>91.8</td>
</tr>
<tr>
<td>1610-19</td>
<td>34.20</td>
<td>101.9</td>
</tr>
<tr>
<td>1620-29</td>
<td>35.05</td>
<td>104.5</td>
</tr>
<tr>
<td>1630-39</td>
<td>44.74</td>
<td>133.4</td>
</tr>
<tr>
<td>1640-49</td>
<td>49.74</td>
<td>147.6</td>
</tr>
<tr>
<td>1650-59</td>
<td>40.29</td>
<td>120.1</td>
</tr>
<tr>
<td>1660-69</td>
<td>41.19</td>
<td>122.8</td>
</tr>
<tr>
<td>1670-79</td>
<td>39.44</td>
<td>117.6</td>
</tr>
<tr>
<td>1680-89</td>
<td>31.37</td>
<td>93.5</td>
</tr>
<tr>
<td>1690-99</td>
<td>44.92</td>
<td>133.9</td>
</tr>
<tr>
<td>1700-09</td>
<td>33.55</td>
<td>100.0</td>
</tr>
<tr>
<td>1710-19</td>
<td>37.22</td>
<td>110.9</td>
</tr>
<tr>
<td>1720-29</td>
<td>33.92</td>
<td>101.1</td>
</tr>
<tr>
<td>1730-39</td>
<td>29.09</td>
<td>86.7</td>
</tr>
<tr>
<td>1740-49</td>
<td>28.27</td>
<td>84.3</td>
</tr>
<tr>
<td>1750-59</td>
<td>34.39</td>
<td>102.5</td>
</tr>
<tr>
<td>1760-69</td>
<td>37.90</td>
<td>113.0</td>
</tr>
<tr>
<td>1770-79</td>
<td>44.43</td>
<td>132.4</td>
</tr>
<tr>
<td>1780-89</td>
<td>45.97</td>
<td>137.0</td>
</tr>
<tr>
<td>1790-99</td>
<td>58.70</td>
<td>175.0</td>
</tr>
<tr>
<td>1800-09</td>
<td>80.73</td>
<td>240.6</td>
</tr>
<tr>
<td>1810-19</td>
<td>89.03</td>
<td>265.4</td>
</tr>
</tbody>
</table>

* 1 quarter of wheat = 8 bushels = 64 gallons.

Table 7.

Outputs of principal agricultural commodities, 1700 - 1850

in Millions of Units (Bushels and Pounds)

<table>
<thead>
<tr>
<th>COMMODITIES</th>
<th>Units</th>
<th>1700</th>
<th>1750</th>
<th>1800</th>
<th>1850</th>
<th>% Rise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains and pulses</td>
<td>bushel</td>
<td>65</td>
<td>88</td>
<td>131</td>
<td>181</td>
<td>178.46</td>
</tr>
<tr>
<td>Meat</td>
<td>lb.</td>
<td>370</td>
<td>665</td>
<td>888</td>
<td>1356</td>
<td>266.48</td>
</tr>
<tr>
<td>Wool</td>
<td>lb.</td>
<td>40</td>
<td>60</td>
<td>90</td>
<td>120</td>
<td>200.00</td>
</tr>
<tr>
<td>Cheese</td>
<td>lb.</td>
<td>61</td>
<td>84</td>
<td>1122</td>
<td>157</td>
<td>157.38</td>
</tr>
<tr>
<td>Volume in 1815</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prices (£ million)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grains/potatoes</td>
<td>£mill</td>
<td>19</td>
<td>25</td>
<td>37</td>
<td>56</td>
<td>194.74</td>
</tr>
<tr>
<td>Livestock products</td>
<td>£mill</td>
<td>21</td>
<td>34</td>
<td>512</td>
<td>79</td>
<td>276.19</td>
</tr>
<tr>
<td>TOTAL</td>
<td>£mill</td>
<td>40</td>
<td>59</td>
<td>88</td>
<td>135</td>
<td>237.50</td>
</tr>
</tbody>
</table>

Table 8.

Utilization of English and Welsh lands, 1700 - 1850

in millions of acres

<table>
<thead>
<tr>
<th>LAND TYPE</th>
<th>in 1700</th>
<th>in 1800</th>
<th>in 1850</th>
<th>Percentage Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arable</td>
<td>11.00</td>
<td>11.60</td>
<td>14.60</td>
<td>32.72</td>
</tr>
<tr>
<td>Pasture/Meadow</td>
<td>10.00</td>
<td>17.50</td>
<td>16.00</td>
<td>14.40</td>
</tr>
<tr>
<td>Woodlands</td>
<td>3.00</td>
<td>1.60</td>
<td>1.50</td>
<td>-50.00</td>
</tr>
<tr>
<td>Wastelands/forests</td>
<td>13.00</td>
<td>6.50</td>
<td>3.00</td>
<td>-76.92</td>
</tr>
<tr>
<td>TOTAL</td>
<td>38.00</td>
<td>38.50</td>
<td>37.30</td>
<td>-1.84</td>
</tr>
<tr>
<td>TOTAL AGRICULTURAL</td>
<td>34.00</td>
<td>35.60</td>
<td>33.60</td>
<td>-1.18</td>
</tr>
</tbody>
</table>

| INDEX OF LAND INPUT | 1.00    | 1.35    | 1.37    | 37.00             |

### Table 9.

**Employment in English/Welsh agriculture, 1700 - 1851, in thousands**

<table>
<thead>
<tr>
<th>Category</th>
<th>1700</th>
<th>1800</th>
<th>1851</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>595</td>
<td>628</td>
<td>971</td>
<td>63.19</td>
</tr>
<tr>
<td>Women</td>
<td>505</td>
<td>426</td>
<td>409</td>
<td>-19.00</td>
</tr>
<tr>
<td>Boys</td>
<td>433</td>
<td>351</td>
<td>144</td>
<td>-66.74</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>1533</td>
<td>1405</td>
<td>1524</td>
<td>0.59</td>
</tr>
<tr>
<td><strong>WEIGHTED INDEX OF LABOUR INPUT</strong></td>
<td>100</td>
<td>95</td>
<td>116</td>
<td>16.00</td>
</tr>
</tbody>
</table>

Table 10.

Capital invested in English & Welsh agriculture
in millions of pounds sterling of 1851-60 values

<table>
<thead>
<tr>
<th>INVESTORS</th>
<th>1700</th>
<th>%</th>
<th>1750</th>
<th>%</th>
<th>1800</th>
<th>%</th>
<th>1850</th>
<th>%</th>
<th>% Difference 1850/1700</th>
</tr>
</thead>
<tbody>
<tr>
<td>LANDLORDS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structures: Roads, Fences, Enclosures</td>
<td>112</td>
<td>61</td>
<td>114</td>
<td>58</td>
<td>143</td>
<td>59</td>
<td>232</td>
<td>66</td>
<td>107%</td>
</tr>
<tr>
<td>TENANTS: Implants</td>
<td>1020</td>
<td>41</td>
<td>8205</td>
<td>3</td>
<td>1018</td>
<td>71</td>
<td>1422</td>
<td>85</td>
<td></td>
</tr>
<tr>
<td>Farm Horses Other Livestock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TENANTS: Sub-total</td>
<td>71</td>
<td>39</td>
<td>81</td>
<td>42</td>
<td>99</td>
<td>41</td>
<td>121</td>
<td>34</td>
<td>70%</td>
</tr>
<tr>
<td>TOTAL INVESTED</td>
<td>183</td>
<td>100</td>
<td>195</td>
<td>100</td>
<td>242</td>
<td>100</td>
<td>353</td>
<td>100</td>
<td>93%</td>
</tr>
</tbody>
</table>

Table 11.

Utilization of the arable lands: crops and fallow, 1700 - 1850

in millions of acres

<table>
<thead>
<tr>
<th>Crops</th>
<th>1700</th>
<th>1750</th>
<th>1800</th>
<th>1850</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>1.4</td>
<td>1.8</td>
<td>2.5</td>
<td>3.6</td>
<td>157.1</td>
</tr>
<tr>
<td>Rye</td>
<td>0.9</td>
<td>0.5</td>
<td>0.3</td>
<td>0.1</td>
<td>-88.9</td>
</tr>
<tr>
<td>Barley</td>
<td>1.9</td>
<td>1.4</td>
<td>1.3</td>
<td>1.5</td>
<td>-21.1</td>
</tr>
<tr>
<td>Oats</td>
<td>1.2</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>66.7</td>
</tr>
<tr>
<td>Beans/Peas</td>
<td>1.3</td>
<td>1.0</td>
<td>1.2</td>
<td>1.0</td>
<td>-23.1</td>
</tr>
<tr>
<td>Turnips</td>
<td>0.4</td>
<td>1.0</td>
<td>1.3</td>
<td>2.0</td>
<td>400.0</td>
</tr>
<tr>
<td>Potatoes</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
<td>0.4</td>
<td>300.0</td>
</tr>
<tr>
<td>Clover</td>
<td>0.5</td>
<td>1.0</td>
<td>1.2</td>
<td>2.2</td>
<td>340.0</td>
</tr>
<tr>
<td>Fallow</td>
<td>3.3</td>
<td>2.5</td>
<td>1.5</td>
<td>1.8</td>
<td>-45.5</td>
</tr>
<tr>
<td>TOTAL</td>
<td>11.0</td>
<td>11.4</td>
<td>11.6</td>
<td>14.6</td>
<td>32.7</td>
</tr>
</tbody>
</table>

Table 12.
Crop yields in bushels per acre, 1700 to 1850

<table>
<thead>
<tr>
<th>CROPS</th>
<th>1700</th>
<th>1750</th>
<th>1800</th>
<th>1850</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>16.0</td>
<td>18.0</td>
<td>21.5</td>
<td>28.0</td>
<td>78.1</td>
</tr>
<tr>
<td>Rye</td>
<td>17.0</td>
<td>18.0</td>
<td>26.0</td>
<td>28.0</td>
<td>64.7</td>
</tr>
<tr>
<td>Barley</td>
<td>23.0</td>
<td>25.0</td>
<td>30.0</td>
<td>36.5</td>
<td>58.9</td>
</tr>
<tr>
<td>Oats</td>
<td>24.0</td>
<td>28.0</td>
<td>35.0</td>
<td>40.0</td>
<td>66.7</td>
</tr>
<tr>
<td>Beans/Peas</td>
<td>20.0</td>
<td>28.0</td>
<td>28.0</td>
<td>30.0</td>
<td>50.0</td>
</tr>
</tbody>
</table>

Table 13.

English agricultural output and productivity

$1700 = 100$

<table>
<thead>
<tr>
<th></th>
<th>1300</th>
<th>1600</th>
<th>1700</th>
<th>1750</th>
<th>1800</th>
<th>1850</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OUTPUT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Population Method</td>
<td>80</td>
<td>100</td>
<td>121</td>
<td>159</td>
<td>272</td>
<td></td>
</tr>
<tr>
<td>Volume Method</td>
<td>100</td>
<td>127</td>
<td>191</td>
<td>285</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demand Method</td>
<td>100</td>
<td>143</td>
<td>172</td>
<td>244</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>AREA</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arable Area</td>
<td>100</td>
<td></td>
<td>128</td>
<td>170</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sown Arable</td>
<td>100</td>
<td></td>
<td>135</td>
<td>199</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meadow and Pasture</td>
<td>100</td>
<td></td>
<td>147</td>
<td>103</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Area</td>
<td>100</td>
<td></td>
<td>138</td>
<td>132</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>LAND PRODUCTIVITY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>By population</td>
<td>100</td>
<td></td>
<td>115</td>
<td>207</td>
<td></td>
<td></td>
</tr>
<tr>
<td>By Volume</td>
<td>100</td>
<td></td>
<td>138</td>
<td>216</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crop Productivity*</td>
<td>3.05</td>
<td></td>
<td>6.73</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Livestock Productivity*</td>
<td>1.04</td>
<td></td>
<td>6.56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheat Yields #</td>
<td>79</td>
<td>72</td>
<td>100</td>
<td>123</td>
<td>136</td>
<td>180</td>
</tr>
<tr>
<td>Cereal Yields +</td>
<td>115</td>
<td>92</td>
<td>100</td>
<td>135</td>
<td>158</td>
<td>250</td>
</tr>
<tr>
<td><strong>LABOUR PRODUCTIVITY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>By Population</td>
<td>77</td>
<td>100</td>
<td>126</td>
<td>141</td>
<td>197</td>
<td></td>
</tr>
<tr>
<td>By Volume of Output</td>
<td>100</td>
<td>134</td>
<td>170</td>
<td>206</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

# Hampshire, Herefordshire, Lincolnshire, Norfolk, Suffolk; but 1300 for Norfolk, Hampshire only.
+ For Norfolk and Suffolk only

Table 14.

Grain and pulse yields per acre in England, c. 1450 to ca. 1800: in bushels per acre

<table>
<thead>
<tr>
<th>CROPS</th>
<th>OPEN ca. 1450</th>
<th>OPEN ca. 1800</th>
<th>ENCLOSED ca. 1800</th>
<th>Per cent Gain by Enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHEAT</td>
<td>10.7</td>
<td>18.6</td>
<td>22.1</td>
<td>18.8%</td>
</tr>
<tr>
<td>BARLEY</td>
<td>16.8</td>
<td>26.3</td>
<td>32.1</td>
<td>22.1%</td>
</tr>
<tr>
<td>OATS</td>
<td>11.7</td>
<td>30.0</td>
<td>38.5</td>
<td>28.3%</td>
</tr>
<tr>
<td>BEANS/PEAS</td>
<td>10.0</td>
<td>20.4</td>
<td>22.9</td>
<td>12.3%</td>
</tr>
</tbody>
</table>

Source:

Table 15.

English labour productivity in grain farming, 1600 - 1800

<table>
<thead>
<tr>
<th>Category of Productivity</th>
<th>1600 Open</th>
<th>1700 Open</th>
<th>1800 Open</th>
<th>1800 Enclosed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output per Acre in lb.</td>
<td>2.55</td>
<td>3.49</td>
<td>3.49</td>
<td>3.92</td>
</tr>
<tr>
<td>Number of Workers per Acre</td>
<td>1.24</td>
<td>1.17</td>
<td>0.91</td>
<td>0.91</td>
</tr>
<tr>
<td>Output per Worker in lb.</td>
<td>2.05</td>
<td>2.97</td>
<td>3.83</td>
<td>4.3</td>
</tr>
<tr>
<td>Index of Labour Productivity</td>
<td>1</td>
<td>1.45</td>
<td>1.87</td>
<td>2.1</td>
</tr>
<tr>
<td>1600 = 1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source:

Table 16

English agriculture in 1801: crop yields in 116 open-field and enclosed-field parishes

Mean Yields in Bushels per Acre Over 116 English Parishes

<table>
<thead>
<tr>
<th>CROP</th>
<th>OPEN FIELD YIELD in bushels</th>
<th>ENCLOSED FIELD YIELD in bushels</th>
<th>PERCENTAGE DIFFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHEAT</td>
<td>18.2</td>
<td>23</td>
<td>26.40%</td>
</tr>
<tr>
<td>BARLEY</td>
<td>25.2</td>
<td>30.6</td>
<td>21.40%</td>
</tr>
<tr>
<td>OATS</td>
<td>27.8</td>
<td>34.9</td>
<td>25.50%</td>
</tr>
</tbody>
</table>
Table 17.

Regional differences in English agricultural productivity: percentage advantage in productivity for selected crops of enclosed fields over open fields, in 1801

<table>
<thead>
<tr>
<th>CROP</th>
<th>SOUTH</th>
<th>EAST</th>
<th>NORTH</th>
<th>WEST</th>
</tr>
</thead>
<tbody>
<tr>
<td>WHEAT</td>
<td>45%</td>
<td>30%</td>
<td>21%</td>
<td>24%</td>
</tr>
<tr>
<td>BARLEY</td>
<td>1%</td>
<td>40%</td>
<td>16%</td>
<td>21%</td>
</tr>
<tr>
<td>OATS</td>
<td>8%</td>
<td>65%</td>
<td>2%</td>
<td>37%</td>
</tr>
</tbody>
</table>

Sources:


Table 18.

English Labour Productivity in Grain Farming, 1600 - 1800

<table>
<thead>
<tr>
<th>Category of Productivity</th>
<th>1600 Open</th>
<th>1700 Open</th>
<th>1800 Open</th>
<th>1800 Enclosed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output per Acre in lb.</td>
<td>2.55</td>
<td>3.49</td>
<td>3.49</td>
<td>3.92</td>
</tr>
<tr>
<td>Number of Workers per Acre</td>
<td>1.24</td>
<td>1.17</td>
<td>0.91</td>
<td>0.91</td>
</tr>
<tr>
<td>Output per Worker in lb.</td>
<td>2.05</td>
<td>2.97</td>
<td>3.83</td>
<td>4.30</td>
</tr>
<tr>
<td>Index of Labour Productivity 1600 = 1.00</td>
<td>1.00</td>
<td>1.45</td>
<td>1.87</td>
<td>2.10</td>
</tr>
</tbody>
</table>

Source:

THE RICARDO MODEL OF ECONOMIC RENT

Prices and Costs (Y axis)

<table>
<thead>
<tr>
<th>Units of Land Added to Production (X axis)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Rent</td>
</tr>
</tbody>
</table>

PRODUCTION COSTS: PER BUSHEL OF GRAIN

UNITS OF LAND ADDED TO PRODUCTION (X axis)