

GOLDEN JUBILEE PRIZE ESSAY

The productivity and management of sheep in late medieval England

by David Stone

Abstract

Sheep husbandry played a vital role in late medieval English agriculture, but evidence from demesne farms reveals that it was blighted by falling fleece weights and rising mortality rates. These trends are currently thought to have been caused by a long term climatic shift towards colder winters. This essay, however, argues that these trends, together with rising fertility rates on some manors, can be explained by changes in the way in which demesne flocks were managed after the Black Death. Rather than being thwarted by their environment, demesne officials were, in essence, responding rationally to worsening economic conditions.

Sheep farming was already of great importance when the Black Death arrived on the shores of Dorset in 1348, but in the hundred years that followed its place in the rural economy of England grew.¹ During this often difficult period for farmers, raising sheep became one of the more lucrative forms of agricultural enterprise, not least because – in an era of steeply rising wages – it required comparatively low labour inputs. The response of the great landlords, whose meticulous record-keeping provides the bulk of our information about medieval agriculture, was swift and decisive: numbers of sheep on their estates increased substantially almost immediately after the Black Death. For example, there were approximately 22,500 sheep on the bishop of Winchester's estate in 1348, but this had increased to about 30,000 by the mid-1350s, peaking at nearly 35,000 in 1369. The scale of the change could be even greater at a local level: there were 107 sheep on the Ramsey Abbey demesne of Warboys (Hunts.) in the early 1340s, but 1005 20 years later.²

Numbers reveal little about the human drama that must sometimes have accompanied these changes. For instance, the villagers of Rougham (Norfolk) seem to have been forced from their homes in the late 1370s and early 1380s in order to provide the lord of the manor with suitable land on which to graze his sheep, and appear to have taken their revenge during the local uprising

¹ With the exceptions, in terms of seigniorial agriculture, of the East Midlands and the North of England: B. M. S. Campbell, *English seigniorial agriculture, 1250–1450* (2000), pp. 163–4.

² M. J. Stephenson, 'Wool yields in the medieval

economy', *EcHR* 41 (1988), pp. 385–6; id., 'The productivity of medieval sheep on the great estates, 1100–1500' (unpublished PhD thesis, University of Cambridge, 1986), p. 395.

of 1381.³ But in the cold light of day, profits were what mattered most to landlords, and the swing to pastoral farming was reflected in the balance of returns from their estates. By the late 1370s, revenue from wool on the bishop of Winchester's estate reached about 80 per cent of arable revenues, while on the Westminster Abbey demesne of Kinsbourne (Herts.) pastoral farming accounted for 70 per cent of total net profits in the late fourteenth century.⁴ Many demesnes were run as mixed farms until they were eventually leased out, which frequently took place in the period c. 1380–1430, but such were the potential gains to be made from sheep husbandry that some landlords continued to manage their flocks directly even after they had ceased to cultivate most of their arable land. In the 1430s, for example, the duchy of Lancaster kept in excess of 1000 sheep on pasture retained from three manors on the Berkshire and Wiltshire downs.⁵ Even so, most large estates had given up their sheep flocks by the middle of the fifteenth century, but it was not only the landlords who were involved in large-scale sheep farming during the later middle ages. For instance, the Giffard family of north Gloucestershire grazed over 2000 sheep on a grange leased from a Cistercian monastery in the late 1440s, while a decade later, Henry Harlegrey of Mildenhall (Suffolk) bequeathed a flock of 840 sheep to his two sons.⁶

Sheep farming plainly played a crucial part in the lives of late medieval men and women. But it is not for this reason alone that the nature of the pastoral economy in the century after the Black Death should be examined. For it is not only the potential but also the problems of sheep farming that shape our understanding of rural fortunes in this period. In particular, trends in wool yields seem to constitute some of the most explicit evidence that we have for the impact of environmental change in the later middle ages. Stephenson revealed a general and pronounced decline in average fleece weights on the bishop of Winchester's estate between about 1370 and 1450, as Figure 1 shows, and he attributed this collapse chiefly to climatic deterioration. He argued that this period saw 'A significant drop in average winter temperatures allied to an increased frequency of very severe winters', and indicated that such a change would have adversely affected the wool yield of sheep in three ways: excessively hard winters would have prompted the gradual development of a shorter, coarser fleece; restricted access to winter grazing, combined with falling fodder supplies, would have reduced stock nutrition and hence wool growth; and harsh winters and lower levels of nutrition would have made flocks more susceptible to diseases such as sheep scab, which brought falling wool yields as the fleece became 'ragged and torn'.⁷

The appeal of Stephenson's explanation for declining wool yields is not difficult to appreciate. His sample is large and geographically widespread, yet the fall in fleece weights was remarkably consistent from manor to manor. For example, mean fleece weights at Twyford (Hants.) and Downton (Wilts.) fell by 31 per cent and 29 per cent respectively between the 1330s and the 1410s.⁸ Even at places further afield, such as Hinderclay (Suffolk) and Wisbech (Cambs.), the

³ A. Davison, *Six deserted villages in Norfolk* (East Anglian Archaeology Report, 44, 1988), pp. 55–7.

⁴ Stephenson, 'Productivity of medieval sheep', p. 149; D. Stern, *A Hertfordshire demesne of Westminster Abbey: profits, productivity and weather* (2000), pp. 147, 231–3.

⁵ C. Dyer, *Making a living in the middle ages: the*

people of Britain, 850–1520 (2002), p. 333.

⁶ *ibid.*, p. 343; P. Northeast (ed.), *Wills of the Archdeaconry of Sudbury, 1439–1474, I, 1439–1461* (Suffolk Records Soc., 44, 2001), pp. li, 417.

⁷ Stephenson, 'Wool yields', pp. 381–5 (quotes taken from pp. 381, 382).

⁸ Stephenson, 'Productivity of medieval sheep', p. 315.

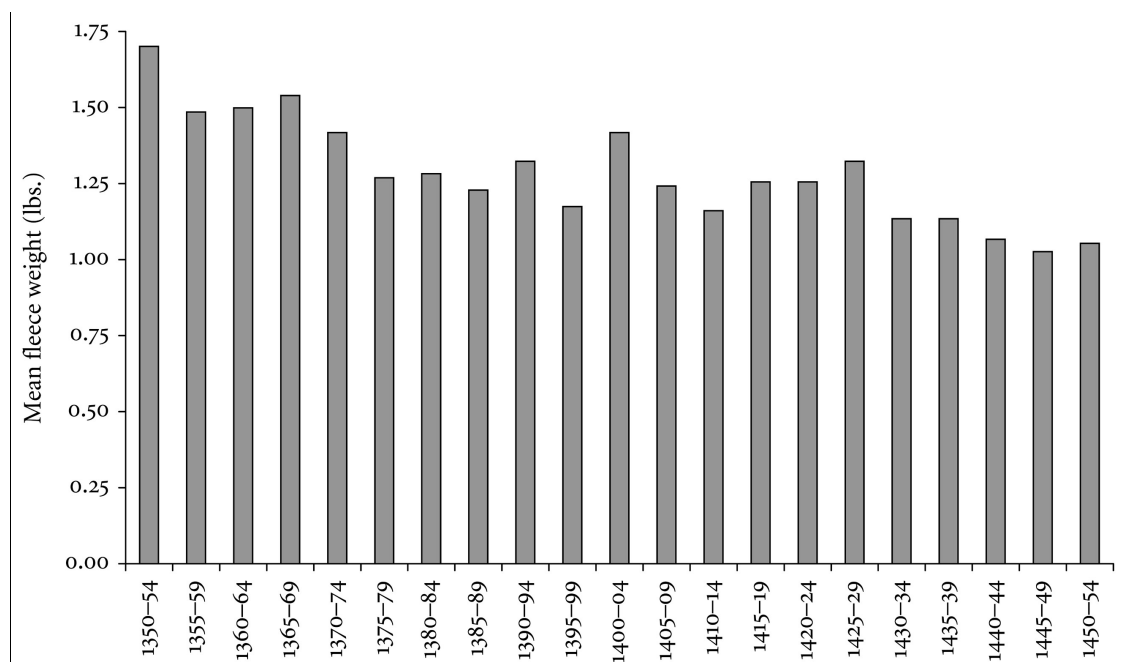


FIGURE 1. Fleece weights on the bishop of Winchester's estate, 1350–1454.

Source: Stephenson, 'Wool yields', p. 378.

trend in fleece weights follows a broadly similar pattern.⁹ Many historical climatologists – including the aptly named H. H. Lamb – also indicate that the late fourteenth and early fifteenth centuries witnessed a string of unusually harsh winters, with the 1430s singled out as the coldest decade of the second millennium.¹⁰ Furthermore, cold winters and settling snow would have had a severe impact on the mortality rates of sheep, as well as affecting the productivity of those that survived, and death rates did increase substantially on the Winchester estates after the Black Death, especially during the period from October to March, as the trend in ewe mortality at East Meon (Hants.) in Figure 2 shows. Indeed, the connection between poor weather and ovine productivity has been deemed sufficiently strong for fleece weights and mortality rates to be used as 'proxy data' for medieval weather conditions.¹¹

This gloomy portrayal of the power of exogenous forces in the century after the Black Death not only adds to our picture of medieval farmers as being adrift on an ecological sea, but it would also seem to confirm the later middle ages as a period of insurmountable crisis in the countryside. But convincing though this explanation for the falling productivity of medieval sheep might appear, there are several indications that climatic change may not have been as influential as Stephenson believed. First, a recent reinterpretation of the documentary evidence

⁹ Fleece weights dropped at Hinderclay by over 26% between 1305–34 and 1370–96 and at Wisbech by 19% between 1327–48 and 1349–1428: Chicago University Library (hereafter Chicago UL), Bacon Mss, 438–61, 484–506; Cambridge University Library (hereafter CUL),

EDR, D8/1/6–9, 13–17, D8/2/2–8, D8/3/5–30, D8/4/1–6.

¹⁰ H. H. Lamb, *Climatic history and the future* (1985), pp. 564–8.

¹¹ Stern, *Hertfordshire demesne*, pp. 85–102.

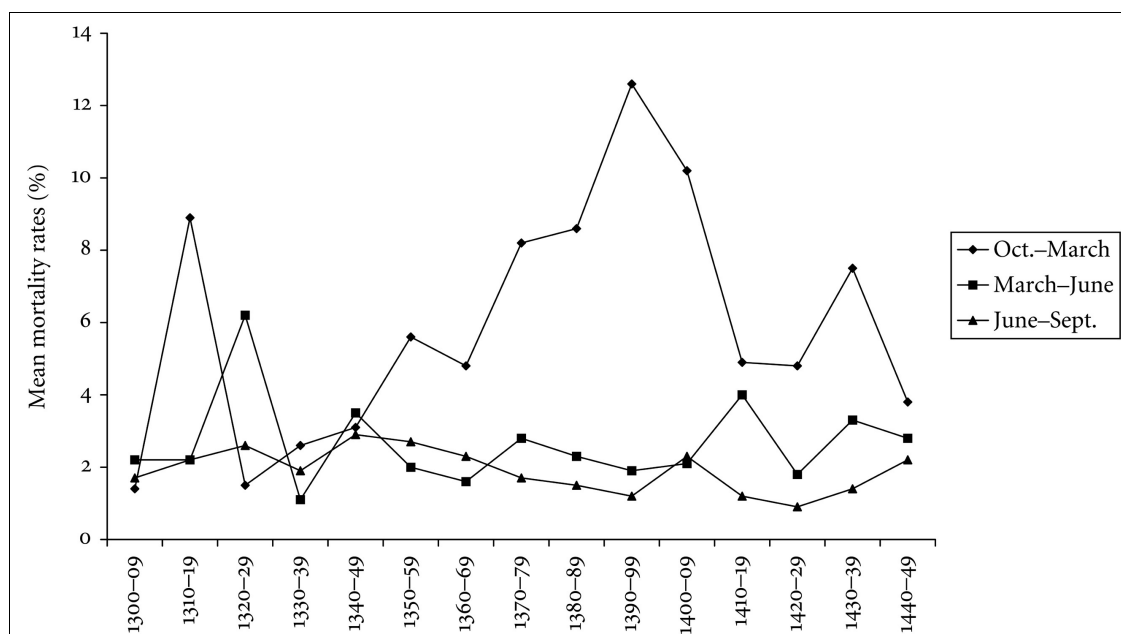


FIGURE 2. Ewe mortality at East Meon (Hants.), 1300–1449.

Source: Stephenson, 'Productivity of medieval sheep', p. 306.

for medieval weather suggests that the period 1370–1430 in fact witnessed less severe, rather than more severe, winters.¹² Secondly, not all data on livestock productivity support the idea of a deterioration in climate. For example, not all livestock suffered rising mortality after the Black Death: at Wisbech (Cambs.), non-working animals such as sheep and pigs were badly affected by murrain at this time, but the mortality rate of cattle actually declined.¹³ Most significantly of all, severe winters and outbreaks of diseases such as sheep scab should also have caused lambing rates to decline, yet – while lambing success did fall on some manors – this was by no means a general experience.¹⁴ Indeed, there could be great variation in the behaviour of lambing rates even on adjacent manors, both on the Winchester estates and elsewhere, as the divergent pattern of lambing rates for the Ramsey Abbey manors of Warboys (Hunts.) and Upwood (Hunts.) in Figure 3 shows.¹⁵ Moreover, the trend in lambing rates and fleece weights could be very different on the same manor. For instance, at Wisbech (Cambs.) and at Knoyle (Wilts.) lambing rates increased in the late fourteenth and early fifteenth centuries at the same time as fleece weights collapsed.¹⁶

These data strongly suggest that the productivity of sheep in the later middle ages was also

¹² A. Ogilvie and G. Farmer, 'Documenting the medieval climate', in M. Hulme and E. Barrow (eds), *Climates of the British Isles: present, past and future* (1997), pp. 120–1.

¹³ CUL, EDR, D8/1/1-D8/4/8.

¹⁴ R. Trow-Smith, *A history of British livestock husbandry to 1700* (1957), pp. 155–6. For evidence of falling lambing rates, see Stephenson, 'Productivity of medieval sheep',

pp. 112–4, 311–12; M. Bailey, *A marginal economy? East Anglian Breckland in the later middle ages* (1989), pp. 124–5.

¹⁵ Lambing rates in this essay are defined as the percentage of ewes bearing a lamb, excluding those ewes dying, sold, or otherwise disposed of before lambing.

¹⁶ Below, fig. 8; Stephenson, 'Productivity of medieval sheep', pp. 313, 315.

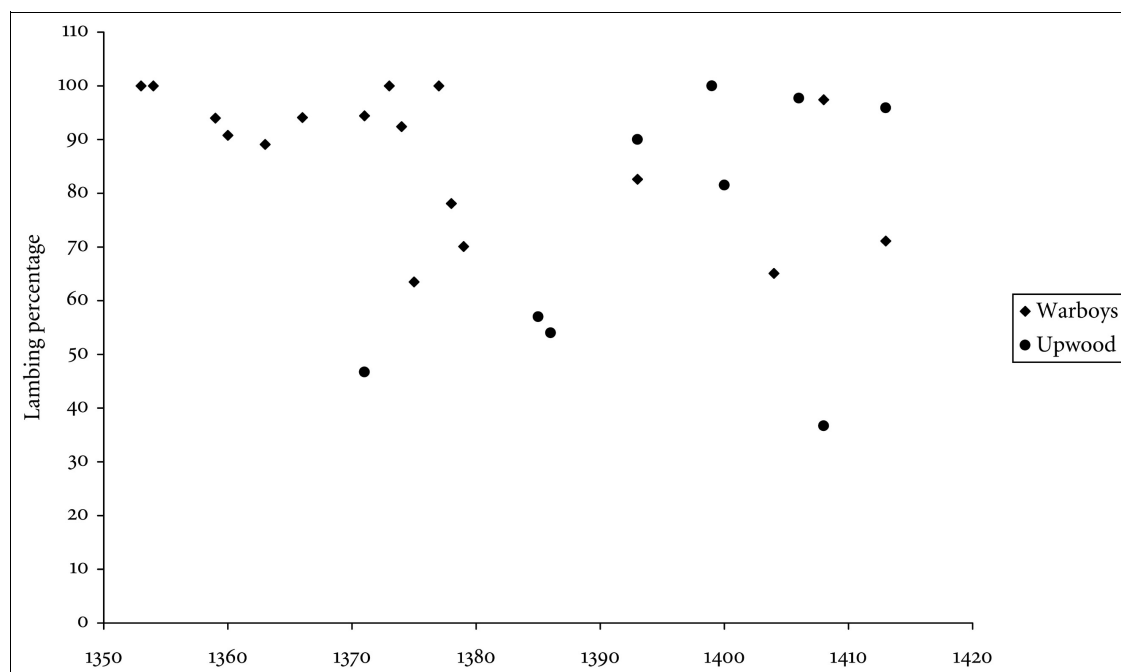


FIGURE 3. Lambing rates at Warboys and Upwood (Hunts.), 1353–1413.

Source: Stephenson, 'Productivity of medieval sheep', pp. 394, 399.

influenced by non-climatic factors. The obvious area to explore in this respect is the management of flocks. After all, farmers were constantly having to make decisions about the best way to utilize their resources, and recent work has added considerably to our understanding of the consequences of such decisions for levels of productivity in medieval England. This is particularly the case with crop yields, which were plainly influenced by the careful adjustments made to levels of inputs as grain prices changed.¹⁷ Decisions also needed to be made about inputs in pastoral farming, not least with regard to the quantity of fodder given to livestock, whether to buy fresh stock or rely on the reproduction of existing animals, and the amount of labour to employ in caring for them. Yet the nature and impact of changes in pastoral management in the later middle ages has hitherto received little attention. Historians who have worked in this area have often employed a broad brush to portray the general state of medieval livestock husbandry, and as a result provide little sense of change over time. Meanwhile, although Thornton and Page highlight the importance of managerial changes in determining the fertility and mortality of flocks and herds, both focus exclusively on the thirteenth and early fourteenth centuries.¹⁸

¹⁷ See, for example, D. Stone, 'Medieval farm management and technological mentalities: Hinderclay before the Black Death', *EcHR* 54 (2001), pp. 612–38.

¹⁸ C. Thornton, 'Efficiency in medieval livestock farming: the fertility and mortality of herds and flocks at Rimpton, Somerset, 1208–1349', in P. R. Coss and

S. D. Lloyd (eds), *Thirteenth century England*, IV, *proceedings of the Newcastle upon Tyne conference, 1991* (1992), pp. 25–46; M. Page, 'Agrarian innovation on the bishop of Winchester's estate in the later middle ages' (paper presented at the Economic History Society conference, 2002).

The potential significance of management for the productivity of sheep in the period after the Black Death is further emphasized by movements in wool prices. During the last quarter of the fourteenth century – at precisely the time when fleece weights started to fall – the price of a stone of wool collapsed, and it continued to drift downwards during the first half of the fifteenth century.¹⁹ Demesne farm managers responded to falling grain prices at that time by deliberately reducing the intensity of arable cultivation, a strategy which probably resulted in declining crop yields. This essay explores whether a similar relationship can be observed between flock management and the productivity of sheep in the century after the Black Death. The essay focuses on lowland England – essentially the area south of a line stretching from the Severn to the Wash – since this region is especially well represented by surviving manorial account rolls, and forms a broadly homogeneous area in terms of the availability and use of land.²⁰ Medieval sheep farming may appear to be a narrow and specialized field of history, but explaining changes in yields, and establishing the extent of human influence over such changes, lies at the heart of the agricultural history of any period. Moreover, sheep have been a major agricultural resource for most rural communities in the past and medieval demesne accounts provide by far the most robust data on the productivity and management of sheep in the pre-modern era.

I

One change in management policy after the Black Death which seems to have affected fleece weights concerns the way in which wool was marketed. When fleece weights can be calculated, it is often the case that they refer to wool that was sold. Manorial wool clips were commonly sold immediately after shearing, or at any rate prior to accounting in September. However, this was not always so: in years in which the price of wool was considered to be low, fleeces were sometimes kept and not sold until the following accounting year in the hope that the price of wool would increase. With generally lower wool prices in the late fourteenth and fifteenth centuries, finding a buyer at an acceptable price was not always possible, and the sale of old wool occurred much more frequently. At Wisbech (Cambs.), old wool was sold on only two occasions between 1314 and 1368, but from then until the demesne was leased in 1430 the wool clip was often kept and sold after it had been stored for up to 15 months.²¹ This strategy is also apparent on demesnes that were still engaged in sheep farming during the recession of the 1440s and 1450s. For example, newly shorn wool frequently remained unsold in these decades on the manors of Shapwick (Dorset), Alciston (Sussex), and Lakenheath (Suffolk).²²

As Lloyd noted, 'Medieval wool did not have good keeping qualities and when a clip was held over from one year to the next it was often sold at a lower price than that fetched by new wool'.²³ This price difference reflects a deterioration in the quality of old wool, but it also seems

¹⁹ D. Farmer, 'Prices and wages, 1350–1500', in E. Miller (ed.), *The agrarian history of England and Wales*, III, 1348–1500 (1991), pp. 462, 512–4.

²⁰ Campbell, *English seigniorial agriculture*, pp. 33, 98–9.

²¹ CUL, EDR, D8/1/1–D8/4/8.

²² T. H. Lloyd, *The movement of wool prices in medieval England*, (*EcHR Supplement*, 6, 1973), p. 26; M. Mate, 'Pastoral farming in south-east England in the fifteenth century', *EcHR* 40 (1987), p. 527; Bailey, *Marginal economy?*, p. 290.

²³ Lloyd, *Movement of wool prices*, pp. 2–3.

likely that the weight of fleeces kept in storage for a year or more decreased as the wool dried out. For instance, at Wisbech (Cambs.) in 1348, 24 fleeces were retained at the end of the accounting year, weighing a total of three-and-a-half stone; when the same 24 fleeces were sold the following year, it is recorded that they weighed only two-and-a-half stone. Similarly, a late fifteenth-century Norfolk wool house received wool at 15 lbs. to the stone but sold it after storage at 14 lbs. to the stone, a practice which 'was probably designed to allow for a decrease in weight'.²⁴

But while storing wool may well have contributed to falling fleece weights in the late fourteenth and fifteenth centuries, it cannot account for the general and prolonged decline in wool yields. Farm managers at Wisbech were highly responsive to cyclical variations in price and so oscillated between selling new and old wool as prices fluctuated, yet fleece weights there remained low throughout this period.²⁵ Moreover, much of the wool on the Winchester estates was sent to a central collecting point rather than being sold locally; whether it was subsequently stored before sale or not is immaterial in terms of the trend in Winchester fleece weights, for the wool was weighed on the demesne farms each year before being sent out.²⁶

II

The reason for the fall in fleece weights probably has more to do with how the sheep themselves were managed. As Stephenson rightly diagnosed, one of the main factors affecting the health of a flock and the yield of wool is the amount and quality of fodder provided for sheep, particularly during the winter season when natural grazing was restricted. The chronic under-feeding of sheep both reduces the growth and thickness of wool and affects their ability to withstand outbreaks of disease. Indeed, in his sheep-farming manual of 1837, William Youatt listed 'bad keep' and 'starvation' at the head of his list of possible causes of sheep scab.²⁷ But whereas Stephenson attributed a reduction in levels of nutrition after the Black Death to climatic change, the evidence from manorial accounts suggests instead that farm managers deliberately cut fodder provision in response to falling wool prices.

The main fodder for all livestock over the winter period was meadow hay, which had been gathered and stored during the previous summer. Most manors had access to some meadowland, but on the bishop of Winchester's manor of Crawley (Hants.) meadow was scarce and most of the hay provided for livestock was bought at market; tracing patterns in fodder provision here is thus a relatively simple task since these purchases were invariably recorded in the accounts from year to year. Although the size of the sheep flock at Crawley stayed comparatively stable, the amount of money spent on hay dropped enormously after the Black Death, as Figure 4 shows, from about 55s. *od.* per annum in the 1360s and 1370s to about 11s. *od.* per

²⁴ CUL, EDR, D8/2/2, 4; K. J. Allison, 'Flock management in the sixteenth and seventeenth centuries', *EcHR* 11 (1958), p. 107.

²⁵ CUL, EDR, D8/3/5–30, D8/4/1–6.

²⁶ D. Farmer, 'Marketing the produce of the countryside, 1200–1500', in Miller (ed.), *Agrarian History*, III, pp. 397–400. However, some outlying Winchester

manors remained outside this system: see Farmer, 'Prices and wages', p. 463, where he notes that, 'On two occasions eight years supply [of wool] accumulated at Wargrave and Witney before the bishop of Winchester was able to sell it'.

²⁷ W. Youatt, *Sheep, their breeds, management and diseases* (London, 1837), p. 537.

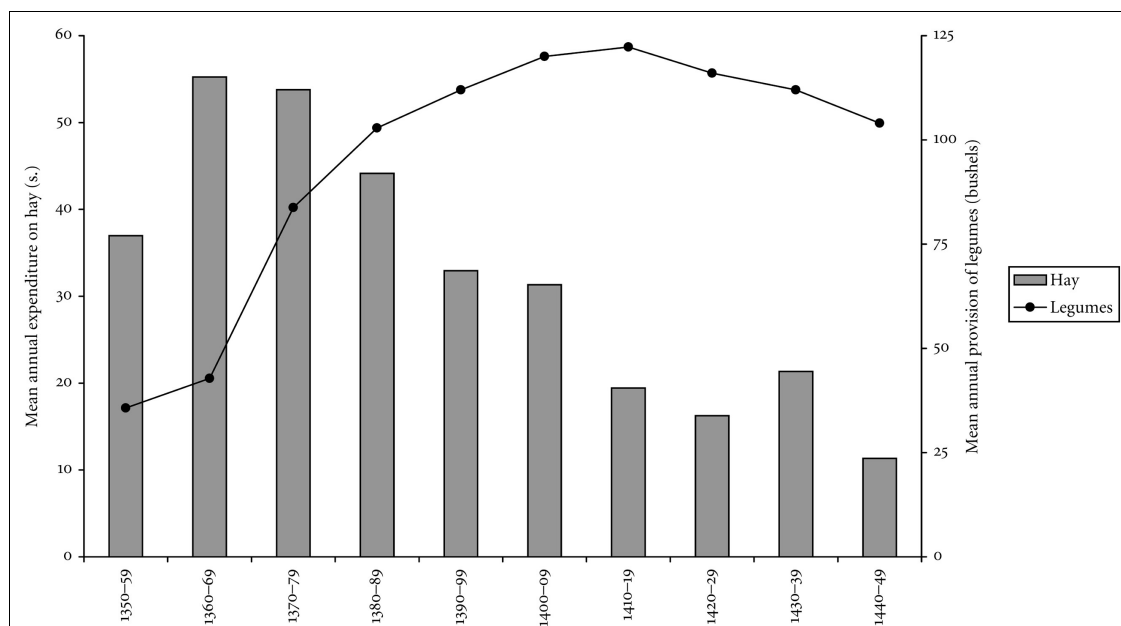


FIGURE 4. Fodder provision at Crawley (Hants.), 1350–1449.

Source: Gras and Gras, *Economic and social history*, pp. 329–31, 364–6, 370–2.

annum in the 1440s.²⁸ It is unlikely that this can be explained simply by falling prices per unit of hay. Such prices are seldom recorded in account rolls, but, where they are, the value of hay seems in fact to have crept up during this period, presumably reflecting the generally high demand for fodder at this time.²⁹ The decline in expenditure on hay at Crawley instead suggests a rational response to changing economic conditions, not least because it began at about the same time that wool prices started to fall. The Crawley sheep were not, however, entirely deprived of winter fodder, for as Figure 4 also shows, the decline in hay in the late fourteenth century was mirrored by a rise in the amount of peas and vetches provided for livestock from the crops grown at Crawley itself. Nonetheless, this change in fodder provision is likely to have affected the health and welfare of the Crawley flock, for hay is generally considered to be much more nutritious for sheep as well as being more to their taste. As Allan Fraser – a shepherd turned lecturer in animal husbandry – commented, ‘As a winter feed for sheep it is true of say of hay as Bottom [of *A Midsummer-Night’s Dream*] said of hay: “Good hay, sweet hay, hath no fellow”’. Significantly, Fraser went on, ‘The old-fashioned beans, peas, and oats silage

²⁸ The flock numbered approximately 1500 sheep in the decades immediately after the Black Death, and about 1400 in the first half of the fifteenth century. Other than the draught beasts required for arable cultivation, sheep were the only livestock kept at Crawley in this period. A sample of accounts suggests that the sheep were given all the hay that was bought and all the leguminous fodder

at this time: N. S. B. Gras and E. C. Gras, *The economic and social history of an English village* (1930), pp. 272, 274–5, 298, 300, 329, 331, 401–19.

²⁹ For example, at Hinderclay (Suffolk) the price of a cartload of hay increased from 3s. 0d. in the years 1373–80, to 3s. 4½d. in 1384–96, and 4s. 2¾d. in 1401–4: Chicago UL, Bacon Mss, 485–91, 494–509.

mixture that was popular on some dairy farms ... was well-nigh useless for sheep.' Sheep, it seems, just picked at the leaves and left the rest.³⁰

Even where hay was available locally in greater abundance than at Crawley, it is by no means certain that sheep would have been better fed after the Black Death. On the bishop of Exeter's manor of Clyst (Devon), hay yields doubled during the early fifteenth century, but the extra hay that was produced was sent to the bishop's palace at Exeter for his horses rather than being fed to the farm livestock.³¹ The situation was even more desperate for sheep when hay yields fell, for they were not necessarily the top priority for farm managers when it came to distributing this scarce resource. At Wisbech (Cambs.), hay yields fell drastically in the decades after the Black Death when hired mowers were replaced by less skilled customary labourers, and the amount of hay given to sheep decreased accordingly, the first priority being the horses and oxen that pulled the manorial ploughs and carts. Notably, fleece weights and lambing rates at Wisbech fell at the precise moment that hay yields collapsed.³²

To some extent, the health and productivity of sheep was also determined by the level and nature of nourishment provided for them when they were lambs. As Youatt put it, 'if the fleece is to be good ... the lamb must not be stinted and starved when young'.³³ This, however, is precisely what happened on some demesne farms in the aftermath of the Black Death. At Hinderclay (Suffolk), the ewes were milked for most of the fourteenth century. During the first few decades of the century, an alternative supply of milk was bought for the lambs to replace the ewes' milk that they would otherwise have consumed, as Figure 5 reveals. This was presumably cows' milk, the value of which was considerably lower than ewes' milk: at Chaceley (Worcs.), where ewes' milk was occasionally purchased for lambs, a gallon of milk cost 1³/₄d. in 1346–47, but at Hinderclay the price of the milk that was bought was only 1d. per gallon.³⁴ Nor would the Hinderclay lambs have been alone in this respect, for lambs on the estates of Peterborough Abbey were also fed cows' milk in the early fourteenth century.³⁵ At Hinderclay, the cows' milk was clearly a direct replacement for suckling in this period: as the number of ewes that were milked fell, so too did the amount of milk bought; in years in which no ewes were milked, cows' milk was seldom bought; and there was an extremely close relationship between the two variables in the 1330s. But, as Figure 5 also shows, when the Hinderclay ewes were milked during the second half of the fourteenth century, no extra milk at all was provided for the lambs, presumably in order to cut costs.

Indeed, the amount of legumes given to lambs at Wisbech (Cambs.) was almost certainly related to the prevailing price of wool, for at the turn of the fifteenth century – a time of

³⁰ A. Fraser, *Sheep husbandry* (sec. edn, 1951), pp. 263–5.

³¹ N. W. Alcock, 'An east Devon manor in the later middle ages, I, 1374–1420, the manor farm', *Reports and Transactions of the Devonshire Association*, 102 (1970), p. 157; id., 'An east Devon manor in the later middle ages, II, leasing the demesne, 1423–1525, 1525–1650', *Rep. and Trans. of the Devon. Assoc.*, 105 (1973), pp. 152–3.

³² D. Stone, 'The productivity of hired and customary labour: evidence from Wisbech Barton in the fourteenth century', *ECHR* 50 (1997), pp. 640–56; CUL, EDR, D8/1/14–

D8/3/4.

³³ Youatt, *Sheep*, p. 48.

³⁴ Westminster Abbey Muniments 21082, 21086; I am grateful to Barbara Harvey for this reference. The author of the anonymous thirteenth-century *Husbandry* noted that a gallon of sheep's milk at that time was worth as much as one-and-a-half gallons of cows' milk: D. Oschinsky (ed.), *Walter of Henley and other treatises on estate management and accounting* (1971), pp. 428–9.

³⁵ K. Biddick, *The other economy: pastoral husbandry on a medieval estate* (1989), p. 114.

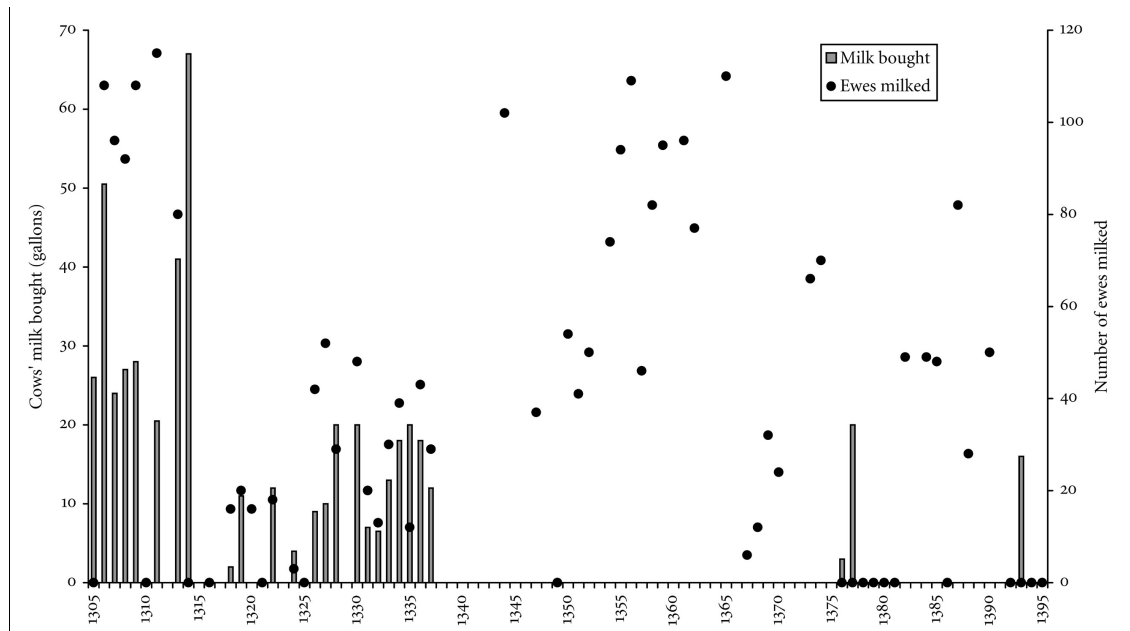


FIGURE 5. The provision of cows' milk for lambs at Hinderclay (Suffolk), 1305–1395.

Source: Chicago UL, Bacon Mss 438–505.

particularly low wool prices – the quantity of legumes provided for lambs was cut by more than half, from over 30 bushels per 100 lambs at weaning in the mid-1390s to under 15 bushels a decade later. This reduction may well have increased the susceptibility of these sheep to disease and affected the growth of wool throughout their lives, for fleece weights at Wisbech fell substantially during the first decade of the fifteenth century.³⁶

Supplementary feeding of livestock is of vital importance since grass only grows for part of the year and all pastures occasionally fail. Nevertheless, the management of grazing resources should not be overlooked. Historians tend to assume that, with the fall in human population, demesne sheep had access to more and better pasture after the Black Death. However, this was not necessarily the case. Larger peasant flocks stimulated an increased demand for grazing land during this period and this often encouraged lords to lease out some of their pasture, a policy which could prove comparatively lucrative.³⁷ For example, while several areas of pasturage at Twyford (Hants.) had been used for the lord's stock in 1301–2, much of this land was then sold in 1409–10, fetching £3 6s. 4d.³⁸ Nor was leasing the only form of competition for demesne

³⁶ CUL, EDR D8/3/5–10, 12–16, 26. Notably, the decision to reduce the amount of fodder provided for lambs was subsequently reversed when wool prices recovered slightly, and during the 1410s and 1420s fleece weights at Wisbech returned to their 1390s level.

³⁷ On Bruton Priory's manor of Horsley (Gloucs.) it has been estimated that over £25 was lost on the rents of meadows and pastures that were reserved for the lord's

sheep during the period 1444–52. In using the meadow and pasture themselves, the priory made a net loss in that period of just over £1: Lloyd, *Movement of wool prices*, p. 26.

³⁸ M. Page (ed.), *The pipe roll of the bishopric of Winchester, 1301–2* (Hampshire Record Ser., 14, 1996), p. 268; id., *The pipe roll of the bishopric of Winchester, 1409–10* (Hampshire Rec. Ser., 16, 1999), p. 362.

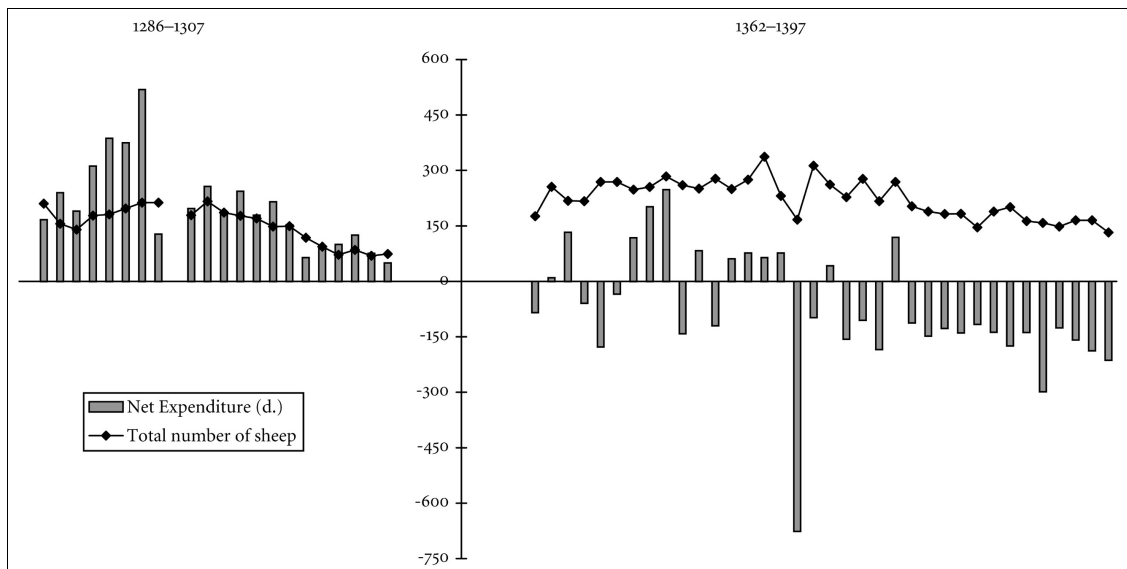


FIGURE 6. Sheep numbers and net expenditure on livestock fodder at Kinsbourne (Herts.), 1286–1307 and 1362–1397.

Source: Stern, *Hertfordshire demesne*, pp. 211–14, 217–22, 229–33.

pasture. At Cheriton (Hants.), nothing was made from the milking of ewes in 1409–10 ‘on account of the want of pasture’. Yet the lord’s cattle at Cheriton were let loose on five areas of pasturage that year and a further two areas were leased.³⁹ This is suggestive more of the prioritization of resource use rather than simply a shortage of pasture.

An overall picture of changes in fodder and grazing provision after the Black Death emerges from the calculations made by Stern for the demesne of Kinsbourne (Herts.). For each year in the periods 1286–1307 and 1362–97, he calculated the cost of corn given to livestock, added the cost of pasture and hay that had been purchased, and subtracted the value of pasture that was leased and hay that was sold. These figures are reproduced in Figure 6, together with the total number of sheep on the demesne each year. The resulting pattern clearly shows that while net expenditure on fodder closely shadowed the number of sheep in the period before the Black Death, the generally larger Kinsbourne flock of the late fourteenth century was much less well served.

Even altering grazing arrangements, which must have been common after the Black Death, may well have been counterproductive, not least because sheep seem to react badly to changes in pasture. As Fraser put it, ‘All sheep are conservatives’, adding that ‘It is not suggested that the converse is necessarily true!’ He went on to explain that ‘Sheep thrive and make better use of pastures to which they are accustomed ... for sheep can be desperately homesick’.⁴⁰ Historians sometimes refer to the psychological impact of the Black Death; perhaps sheep should be included in such an interpretation. Fortunately, the effects of changes in pasture at this time

³⁹ Page (ed.), *Pipe roll, 1409–10*, pp. 340–1.

⁴⁰ Fraser, *Sheep husbandry*, p. 257.

are sometimes more tangible. At Wisbech (Cambs.), sheep were pastured chiefly on demesne herbage in the decades before the Black Death and housed in a sheep cote during the winter months. But at times of low wool prices in the later middle ages the herbage was often leased, no money was spent on the upkeep of the sheep cote, and sheep were instead grazed on an area of marshland to the west of the manor.⁴¹ The danger of this arrangement is made explicit in the accounts: not only were 373 sheep drowned in the marsh in December 1398, by what the reeve stressed to his auditors was 'a sudden rise in water', but the sheep also became increasingly susceptible to liverfluke, an emaciating disease caused by parasitic flatworms and hosted by moisture-loving snails, referred to by contemporaries as sheep rot.⁴² One symptom of sheep rot mentioned by Houghton in the seventeenth century was that 'the wooll would drop from their backs of it self';⁴³ at Wisbech, the increased incidence of liverfluke, brought on by changes in grazing arrangements, may well have contributed to the fall in fleece weights.

III

The health and productivity of flocks also appears to have been affected by changes in the organization of sheep farming after the Black Death. As wool prices dropped in the late fourteenth and early fifteenth centuries, and the buying of new animals began to cut deeper into the purses of landlords, many estates relied to a much greater extent on breeding as a means of replacing their stock. At this time, the manors on large estates were increasingly divided between those which mainly kept ewes and bred lambs, and those which primarily produced wool from flocks of wethers supplied by the breeding manors. The development of this more integrated and isolated approach to sheep farming took place, for example, on the Lancaster, Hungerford, and Bury St Edmunds Abbey estates in the late fourteenth and early fifteenth centuries, and was sometimes reflected by the appearance of centralized accounting for sheep, as on the estates of Norwich Cathedral Priory in the 1390s.⁴⁴ The impact of such changes on the inflow of fresh stock can be seen on the bishop of Ely's manor of Wisbech (Cambs.), where new sheep were purchased in 70 per cent of years between 1314 and 1371, but in only 23 per cent of years between 1372 and 1430; indeed, in maintaining a flock of over 500 sheep in the 1410s and 1420s, farm managers at Wisbech bought only one ram and 37 lambs.⁴⁵

Such a policy, though cheaper, brought considerable risks. As Youatt warned, after 'breeding too long from close affinities', sheep 'do not bear the severity of the weather quite so well, and perhaps ... are somewhat more subject to disease'.⁴⁶ His apprehension is certainly borne out by medieval evidence. At Kinsbourne (Herts.), a temporary reliance on breeding rather than market purchases at the turn of the thirteenth and fourteenth centuries ushered in a decade of increased disease and falling fleece weights. At Clyst (Devon), the introduction of new stock

⁴¹ CUL, EDR, D8/1/6-D8/3/17.

⁴² CUL, EDR, D8/2/16-17, D8/3/11, 17.

⁴³ Quoted in Trow-Smith, *History of British livestock husbandry*, p. 249.

⁴⁴ Stephenson, 'Productivity of medieval sheep', pp. 58-9; Bailey, *Marginal economy?*, pp. 291-2; Chicago UL, Bacon Mss, 506-10; Campbell, *English seigniorial agriculture*, p. 236, n. 191. There were exceptions: on the

duchy of Lancaster's Berkshire manors of Aldbourne, Chipping Lambourne, and Berwick, numbers of wethers were maintained by buying new stock, even in the late 1430s: Lloyd, *Movement of wool prices*, p. 25. The duchy must have had a very good reason for persevering with such an expensive policy.

⁴⁵ CUL, EDR, D8/1/1-D8/4/8.

⁴⁶ Youatt, *Sheep*, pp. 494-5.

TABLE 1. Sheep disease, purchases, and fleece weights at Wisbech (Cambs.), 1395–1412

Year	Disease and mortality		Sheep bought		Fleece weight (lbs.)
	No. bald	Mortality (%) ^a	Adults	Lambs	
1395	0	4.9	0	0	2.02
1396	4	10.2	0	0	—
1397	1	12.7	0	0	1.79
1398	3	6.2	0	0	—
1399	0	64.7	116	129	2.12
1401	0	4.8	0	0	1.90
1402	0	10.6	0	10	2.06
1403	0	11.3	0	0	1.55
1404	0	4.6	0	0	1.95
1405	0	5.0	0	0	1.91
1406	5	17.9	0	0	1.55
1407	2	36.5	0	29	1.51
1408	0	9.8	105	40	1.71
1409	11	13.2	170	0	1.63
1410	0	8.4	0	0	2.26
1411	0	3.4	0	0	2.05
1412	0	8.1	0	0	1.93

Notes: ^a excluding lambs.

Source: CUL, EDR, D8/3/7–20, 26.

became less frequent in the 1390s and 1400s, and the number of sheep that could not be shorn because they were ‘naked’ or ‘plucked’ rose.⁴⁷ Apart from anything else, increased self-sufficiency probably aided the spread of highly contagious diseases such as sheep scab; hence the reference to ‘naked’ sheep, since loss of wool was one of the chief symptoms of scab. The chain of cause and effect can be seen in more detail in the virtually continuous series of accounts for Wisbech (Cambs.). From the late fourteenth century onwards, references to bald sheep begin to appear in the Wisbech accounts, again presumably referring to scab. As Table 1 shows, these references occur in runs, as in the years 1396–8 and 1406–9, which suggests that once scab had become established in the flock, it took several years to disappear. As the table also shows, outbreaks of scab were reflected by higher levels of mortality in the Wisbech flock in general, the only exception being 1399 when (as we saw) the heavy loss was caused by drowning.⁴⁸ Significantly,

⁴⁷ Stern, *Hertfordshire demesne*, pp. 85–6, 139, 229–30; Alcock, ‘East Devon manor, I’, pp. 161–2, 166. Notably, whenever fresh stock was acquired at Clyst, the number of naked sheep decreased temporarily.

⁴⁸ Some historians have doubted whether scab actually caused death, though it is instructive that Henry Best wrote of the effects of scab in 1642 that ‘oftentimes (after

a long declininge and going backe) [they] turne up their heeles’, a diagnosis which modern experts confirm: D. Woodward (ed), *The farming and memorandum books of Henry Best of Elmswell, 1642*, (Records of Social and Economic History, new ser., 8, 1984), p. 31; D. W. Tarry, ‘“Sheep scab” and other forms of mange’, in W. B. Martin and I. D. Aitkin (eds), *Diseases of sheep* (2nd edn, 1991), p. 261.

the factor that seems to have been most influential in breaking these cycles of scab was the purchase of considerable quantities of sheep in 1399 and 1408–9. Moreover, these purchases also seem to have had a beneficial effect on average fleece weights. Fleece weights were low in 1397 and between 1406 and 1409, when disease was present in the flock, but in the years 1399–1402 and 1410–12, just after purchases of sheep, fleece weights were substantially higher.

It seems highly probable, then, that a long-term policy of greater self-sufficiency would have had an adverse effect on the health of flocks in the later middle ages, and that this in turn helped to depress fleece weights. But with the high incidence of disease among sheep flocks in the period after the Black Death, lambing success should, in theory, have been reduced along with wool yields, even if the practice of selling old wool sometimes depressed the latter to a greater extent. An explanation is clearly required for the improved performance of lambing evident on some demesnes, such as Wisbech, in the later middle ages.

Levels of ewe fertility in medieval sheep breeding were doubtless affected by a wide range of factors, some of which are easily quantifiable, such as the ratio of ewes to rams, and others of which are not, such as the quality of the rams. However, the factor which seems to have had the greatest impact on trends in fertility rates after the Black Death was the health and strength of the ewe, and the chief determinant of this was whether or not they were milked. Milking had a more debilitating effect on ewes than the suckling of lambs, since milking often went on beyond the date at which lambs would have been weaned. As Ryder wrote, 'whereas a normal lactation will cease when the lambs are weaned at about five months, milking will extend the lactation period to seven months after birth'.⁴⁹ Lactation has the effect of delaying the return of the normal cyclical pattern of oestrous behaviour in the ewe through the release of prolactin.⁵⁰ As Fitzherbert exclaimed – rather less clinically – in 1523, 'Howe be it they vse in some places to mylke theyr ewes, whan they haue wayned theyr lambes: but that is great hurte to the ewes, and wyll cause them, that they wyll not take the ramme at the tyme of the year for pouertye, but goo barreyne'.⁵¹ Thirteenth-century agricultural writers were clearly also concerned about the effects of prolonging lactation, though notably they disagreed on the date at which milking should cease. The author of the *Seneschaucy* noted that 'no ewe ought to be milked after the Nativity of Our Lady [8 September] because they are then slow to mate'. By contrast, readers of the anonymous *Husbandry* were warned not to risk milking ewes after 1 August 'because they would become worth less'.⁵² Nor was knowledge of the adverse effects of milking confined to the writers of treatises, as the large fine levied on the lord's shepherd at Walsham le Willows (Suffolk) in 1346 'because he milked the ewes, against the orders of the lord and his bailiffs' suggests.⁵³

⁴⁹ M. L. Ryder, *Sheep and man* (1983), p. 689.

⁵⁰ P. Mauleon, 'Manipulation of the breeding cycle', in G. L. Tomes, D. E. Robertson, and R. J. Lightfoot (eds), *Sheep breeding* (2nd edn, 1979), pp. 443–5.

⁵¹ W. W. Skeat (ed.), *The book of husbandry by Master Fitzherbert* (1882), p. 61. See also Youatt, *Sheep*, p. 49, where he suggested that 'that which should have ... brought her regularly and effectually into season for impregnation or given her strength to yean a full-grown and healthy lamb, has been gradually abstracted in the

milk ... He who followed it up too closely was sure to have fewer lambs'.

⁵² The author of the Gloucester Treatise compromised by suggesting that milking could take place until Michaelmas (29 September), but that it was best to stop by 1 August in order to ensure the ewes' strength for winter: Oschinsky (ed.), *Walter of Henley*, pp. 286–7, 428–9, 472.

⁵³ R. Lock (ed.), *The court rolls of Walsham le Willows, 1303–50* (Suffolk Rec. Soc., 41, 1998), p. 297.

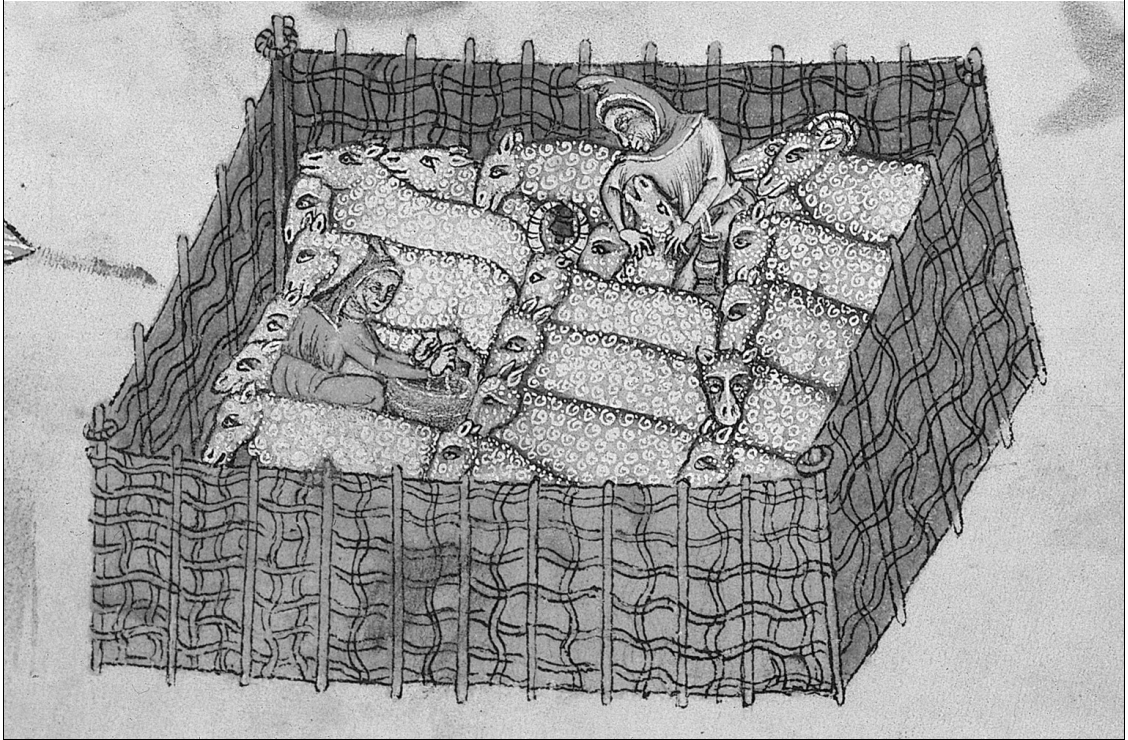


FIGURE 7. Milking and salving sheep in the Luttrell Psalter of c. 1340.

Source: British Library 42130 fo. 163v. By permission of the British Library.

Nevertheless, as the celebrated picture from the Luttrell Psalter of c. 1340 reflects (Figure 7), it was generally common practice to milk ewes in the years before the Black Death. Most of the milk produced in this period was probably consumed as cheese. On the bishop of Winchester's estate, for example, '[t]he manors selling cheese were the manors with flocks of ewes, for most of the Winchester cheese at that time came from the milk of sheep, not cows'.⁵⁴ But the illustration effectively marks the end of an era, for on many demesne farms the practice of milking ewes seems to have died out in the late fourteenth and early fifteenth centuries. The regular milking of ewes ceased at Kinsbourne (Herts.) in the 1360s, at Wisbech (Cambs.) in the 1370s, at Farleigh (Somerset) by the 1380s, at Hinderclay (Suffolk) in the 1390s, at Monks Deverill and Longbridge Deverill (Wilts.) by about 1400, and lactage payments disappeared almost entirely from the Winchester accounts by the 1410s. It was not the case everywhere – for example ewes were regularly milked in Sussex until the late fifteenth century – but nonetheless there does seem to have been a general retreat from the milking of ewes in the decades after the Black Death.⁵⁵

The cessation of ewe-milking at this time may partly reflect the declining value of their

⁵⁴ Farmer, 'Marketing the produce', p. 401.

⁵⁵ Stern, *Hertfordshire demesne*, p. 189; CUL, EDR, D8/2/13-D8/3/3; E. Miller, 'Farming practice and tech-

niques: the southern counties', in Miller (ed.), *Agrarian history*, III, pp. 295–6; Chicago UL, Bacon Mss, 497–506; Mate, 'Pastoral farming', p. 528.

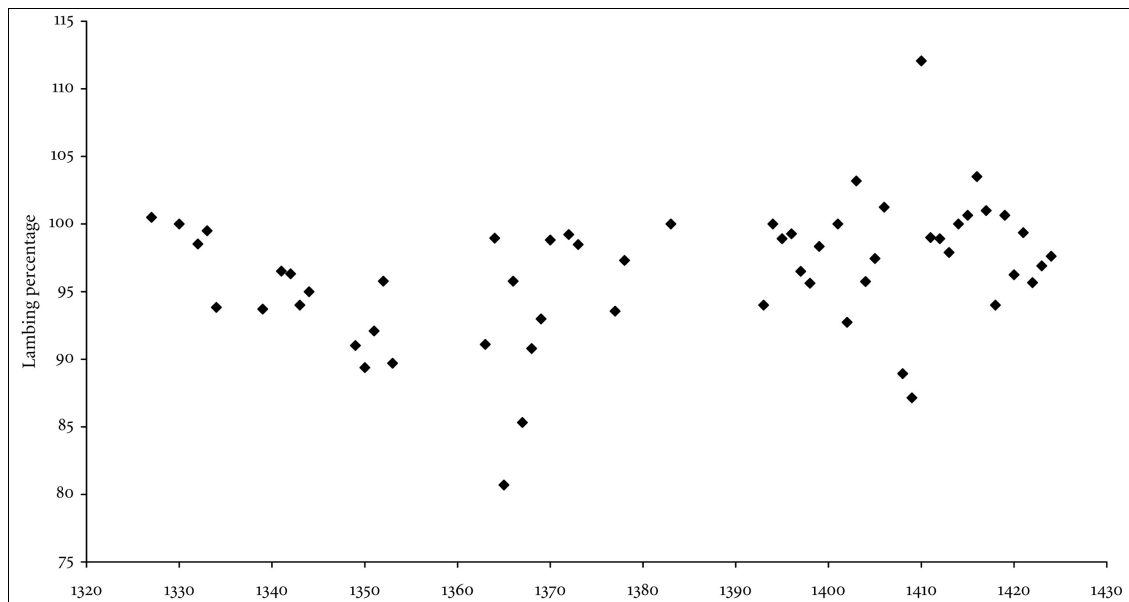


FIGURE 8. Lambing rates at Wisbech (Cambs.), 1327–1424.

Source: CUL, EDR D8/1/6–D8/4/3.

milk,⁵⁶ but it probably also represents an attempt to maximize the breeding potential of ewes as part of the move towards greater self-sufficiency. Either way, it does seem to have led to higher lambing rates. At Wisbech, for example, the fertility of ewes generally rose from the 1370s onwards, as Figure 8 shows. Lambing rates on this demesne had initially fallen in the aftermath of the Black Death, when the hay rations of sheep had been cut, but by the turn of the fifteenth century, even though disease was still rife in the Wisbech flock, fertility rates were boosted to a level exceeding even that of the early fourteenth century. Indeed, although there has previously been little evidence for twinning in medieval sheep, some ewes at Wisbech clearly bore twins on several occasions in the early fifteenth century.⁵⁷ Similarly, at Crawley (Hants.), the cessation of milking in the 1410s brought higher lambing rates in the 1420s and 1430s.⁵⁸

So the move towards an increased reliance on breeding had benefits as well as drawbacks for the productivity of sheep. But we should not simply assume that the breeding of lambs was entirely free from problems in the early fifteenth century. As the Wisbech evidence shows, lambing rates could still vary considerably from year to year at this time. The main problem seems to have been that some of the young ewes were barren, as Table 2 reveals.⁵⁹ The generally

⁵⁶ At Wisbech (Cambs.), ewes fetched 3–4d. per head for lactage between 1314 and 1354, but only 2–3d. per ewe in the 1360s and 1370s: CUL, EDR, D8/1/1–D8/2/24.

⁵⁷ See Trow-Smith, *History of British livestock husbandry*, p. 151. The Wisbech evidence is supported by specific references to ewes producing two lambs at Hinderclay (Suffolk) in the mid-1350s: Chicago UL, Bacon

Mss, 473–5.

⁵⁸ Miller, 'Farming practice', p. 296.

⁵⁹ Medieval accounts often seem to have distinguished sterility from miscarriage, as at Downton (Wilts.) in 1301–2, when the reeve noted that of 48 ewes not bearing a lamb '28 were sterile and 20 aborted': Page (ed.), *Pipe roll, 1301–2*, p. 70.

TABLE 2. Retarded fertility among young ewes at Wisbech (Cambs.), 1401–1409

<i>Year</i>	<i>Lambing rate (lambs per 100 ewes)</i>	<i>% young ewes in breeding flock</i>	<i>% young ewes barren</i>	<i>Lamb mortality 2 years earlier (%)</i>
1401	100	46.1	0	7.7
1402	93	25.9	28.1	— ^a
1403	103	18.6	0	5.6
1404	96	17.4	24.4	9.3
1405	97	16.2	15.8	11.0
1406	101	34.4	0	8.0
1408	89	27.0 ^b	41.0	19.3
1409	87	18.6 ^b	69.2	27.5

Notes: ^a Although a death rate cannot be calculated for 1400, due to a gap in the series of accounts, the bare statistics on the size of the flock in Sept. 1399 and Sept. 1400 suggest that mortality was fairly high between those dates: by Sept. 1400, the total size of the flock had fallen below 400 for the first time since the 1370s.

^b the proportion of young ewes cannot be calculated precisely because some ewes (of unknown age) were bought before lambing.

Source: CUL, EDR, D8/3/11–18, 26.

lower reproductive rates of young ewes is a recognized fact of sheep farming.⁶⁰ Yet this was clearly not a constant problem at Wisbech, for excellent lambing rates were sometimes achieved despite there being large numbers of young ewes in the breeding flock. Fluctuating lambing rates at this time can in fact be explained more consistently by examining the life-cycles of young ewes. As Table 2 also shows, the incidence of barrenness among young ewes at Wisbech corresponds very closely with high mortality in the flock two years earlier, that is during the season in which the young ewes were born. Likewise, years in which fertility was high correspond with low death rates among lambs two years earlier. On the assumption that mortality rates provide a reasonable indication of the health of the surviving lambs, it seems that weakened female lambs were more likely to be barren during their first reproductive cycle. Even in terms of fertility, then, the move towards self-sufficiency was not an unqualified success: a reduction in milking may have brought higher productivity, but self-sufficiency also encouraged the spread of disease and in some years this could hamper the development of young ewes.

IV

High lamb mortality also had a knock-on effect on lambing success at Wisbech in the late 1410s and 1420s, but on this occasion the blame seems to have lain with the demesne shepherds, or at least the relative lack of them. The sharp rise in the death rate of Wisbech lambs during this period corresponds very closely with a marked decline in labour inputs per lamb: in fact, correlating lamb mortality rates for the years 1410–22 with labour inputs per lamb born, using

⁶⁰ As Owen wrote, 'Ewe lambs ... have lower ovulation rates than more mature ewes, as well as poorer conception rates'. J. B. Owen, *Sheep production* (1976), p. 183.

the number of man days worked by shepherds over a six-month period, produces a Spearman Rank coefficient of -0.702 , which is significant at a 1 per cent level of probability.⁶¹

Indeed, labour in shepherding may generally have had a significant influence on the health and productivity of late medieval sheep. Labour is often overlooked as a dynamic factor in pastoral husbandry, not least because sheep farming – as is well known – is much less labour intensive than arable farming. But that should not blind us to the crucial role that shepherds played in maintaining the health and welfare of their flocks. Indeed, shepherding could often be laborious, particularly at lambing time in the spring, or when salving sheep with tar and grease in the autumn in order to protect them against lice, scab, and harsh winter weather, a task being undertaken by the higher of the two figures in the picture from the Luttrell Psalter (Figure 7). An indication of the arduous nature of the latter task is provided by Henry Best, who noted in 1642 that no more than seven sheep could be smeared in one day.⁶² At that rate, shepherds on the bishop of Winchester's demesne at Downton (Wilts.) would have required 177 man-days in the autumn of 1409 to smear the whole flock.⁶³ Nor was the responsibility of a shepherd restricted to performing tasks such as this, for an equally important part of a shepherd's job was to observe the behaviour of the flock and act swiftly and appropriately if need be. In particular, the attentiveness and skill of the shepherd could have a massive impact on mortality rates in the first few months after lambing. For example, suckling could be a potentially fatal process for ewes and lambs alike if shepherds were not watchful. Suckling ewes can suffer from inflammation of the udder, a problem which, while easily treated, can result in the death of the ewe if not caught in sufficient time. Walter of Henley, writing in the thirteenth century, warned of the need for shepherds carefully to 'pulle away the woolle betwene the teates of the eawes for often it happeneth that the woolle getteth into the mouthes of the lambes and they swallowe it downe and it abydethe in theyr stomacke and therof a great many doe perishe'.⁶⁴ The weaning of lambs was also a process which required extraordinary care. Lambs that are hurried too quickly onto pasture are prone to suffer from an inflammatory fever known as 'staggers' or 'The Blood'; as Fitzherbert put it, 'shepe, that hath that, wil dye sodeinly ... and the skyn wyll be ferre ruddyer, lyke blode'.⁶⁵ Sometimes there might only be an hour or so between a lamb appearing to be in perfect health and then abruptly dying, and others would quickly die from the same cause unless the shepherd acted quickly. Because of the need for careful timing of weaning, hawk-like observation, and prompt action, Youatt was at pains to point out that 'where this [disease] is found it is attributable to bad management'.⁶⁶

Two developments in particular suggest that demesne sheep received less care and attention in the century after the Black Death than they did in the thirteenth and early fourteenth centuries. First, as the Wisbech evidence suggests, there was often an increase in the number of sheep that shepherds were expected to look after. On some estates, the increase was comparatively modest: for instance, on the bishop of Winchester's estate the average number of

⁶¹ CUL, EDR, D8/3/18-D8/4/1.

⁶² Woodward (ed.), *Farming and memorandum books*, p. 31. Later in the seventeenth century, Houghton noted that 12 sheep could be greased in a day: Trow-Smith, *History of British livestock husbandry*, p. 249.

⁶³ The flock at that time comprised 416 wethers, 8

rams, 511 ewes, and 304 yearlings. Page (ed.), *Pipe roll, 1409–10*, pp. 66–7.

⁶⁴ Youatt, *Sheep*, pp. 514–5; Oschinsky (ed.), *Walter of Henley*, pp. 338–9.

⁶⁵ Skeat (ed.), *Book of husbandry*, p. 47.

⁶⁶ Youatt, *Sheep*, p. 478.

sheep that each shepherd watched over grew by 14 per cent between 1305–6 and 1381–2. But elsewhere the change was more dramatic. For example, on five Glastonbury Abbey manors, the number of sheep per shepherd rose by 88 per cent between 1340 and 1420, while on the Hungerford manor of Heytesbury (Wilts.) there was an increase of 190 per cent between 1341 and 1379.⁶⁷ Such a reduction in labour inputs per animal, although potentially injurious to their productivity, was by no means irrational; on the contrary, given the general rise in the level of wages relative to the capital value of livestock, this was an entirely rational response to the economic conditions ushered in by the Black Death. The balance between the cost of labour and capital had probably been moving hesitantly in this direction since the late thirteenth century, but – judging by the example of Turweston (Bucks.) – it seems that it was only in the last quarter of the fourteenth century that the change in relative values gathered momentum. Here, the annual stipend of a shepherd increased from 7s. 0d. in the 1370s to 11s. 0d. in the 1390s, at the same time as the average market value of a wether dropped from about 2s. 3d. to 1s. 7d.⁶⁸

Secondly, some medieval demesnes may well have found it increasingly difficult to attract good shepherds after the Black Death. In part, this was because of the comparatively low rates of pay that they were prepared to offer in an era of labour scarcity. On the Westminster Abbey manor of Bourton on the Hill (Gloucs.), the shepherd, carters, and ploughholders had all been paid 5s. 6d. per year in the 1340s, but while the annual stipend of carters and ploughholders had increased to 16s. by the 1390s, the shepherd was paid only 10s. Notably, the bishops of Winchester must have found it almost impossible to attract and keep good shepherds, for until the last decade of the fourteenth century the cash stipend for male *famuli* on this estate was usually just 4s. 0d. a year, rising to 5s. 0d. a year at the turn of the fifteenth century.⁶⁹ While this inflexible policy on stipends perhaps enabled the Winchester estates to maintain a comparatively stable ratio of shepherds to sheep, there may well have been significant repercussions in terms of the quality of these shepherds.

In fact, if contemporary social commentators are to be believed, the efficiency of labour was generally declining in the years after the Black Death: as John Gower put it in the 1370s, ‘a short time ago one [labourer] performed more service than three do now’.⁷⁰ Where it can be gleaned, evidence from manorial records regarding the quality of shepherding bears out these complaints. The court rolls of Walsham le Willows (Suffolk), which run in a virtually continuous series for much of the fourteenth century, reveal that the lord’s shepherds were hauled before the court on several occasions between 1346 and 1397 to explain their negligence in performing important aspects of their job. For example, William Lene, ‘the master shepherd’, was in mercy in 1351 ‘because a great part of the lambs died in the preceding year as a result of his lack of supervision’. Subsequently, Walter Bonde came before the court in 1368 ‘because he tended the lord’s sheep

⁶⁷ D. Farmer, ‘The *famuli* in the later middle ages’, in R. H. Britnell and J. Hatcher (eds), *Progress and problems in medieval England: essays in honour of Edward Miller* (1996), pp. 221–2. Demesne shepherds often received extra help at lambing time, but rarely at any other time during the year.

⁶⁸ Farmer, ‘*Famuli*’, pp. 232–3; id., ‘Prices and wages’,

p. 509.

⁶⁹ Farmer, ‘*Famuli*’, pp. 231–2.

⁷⁰ E. W. Stockton (ed.), *Major Latin works of John Gower: the ‘Voice of one crying’ and the ‘Tripartite chronicle’* (1962), p. 209. See also J. Hatcher, ‘England in the aftermath of the Black Death’, *Past and Present* 144 (1994), pp. 10–19.

badly, not anointing them with salve at the proper time when necessary, and as a result their condition was greatly worsened, to the lord's great loss'.⁷¹ Evidence from the pipe rolls of the bishopric of Winchester is similarly damning. On this estate after the Black Death, sheep – especially lambs – began to die in considerable numbers from a summer disease labelled the 'Red Death' (*rubeo morbo*). The first reference to the 'Red Death' in these accounts comes in 1353, when 29 wethers and 210 lambs died at Knoyle (Wilts.), and allusions to this disease became increasingly common in the next hundred years.⁷² The seasonality, description, and victims of this disease suggest that this may have been 'The Blood'. If this was the case, it is hard to escape the conclusion that at least some of the problems with disease and productivity on the Winchester estates and elsewhere were caused, as Youatt suspected, by 'bad management'.

V

Harsh winter weather doubtless brought significant difficulties for sheep farmers in some years during the later middle ages. But in explaining the long term decline in the performance of seigniorial sheep husbandry at this time, the role of climatic change has been exaggerated. Mortality rates of demesne sheep frequently rose and fleece weights generally collapsed, but these trends seem to have been the result, primarily, of changes in flock management. Unfortunately, our knowledge of the management of medieval flocks is by no means complete. For example, we know little about the quality of wool that was shorn from demesne sheep and how this may have changed over time. Perhaps those landlords who continued to buy sheep in the later middle ages were actively seeking animals with a better quality of wool in order to secure higher prices? After all, there clearly were different breeds of sheep in medieval England, and a finer fleece could often prove more valuable than a coarser one even though it might be substantially lighter.⁷³ Nevertheless, many aspects of demesne flock management can be traced, and where trends can be discerned, these show that management changed in significant ways after the Black Death. Many of these changes were made in response to falling prices and rising costs. It may well have been the case that the clarity and speed of this response was greater on those demesnes on which sheep farming was no longer part of an integrated arable system, yet most of the examples in this essay relate to demesnes that were still engaged in mixed farming. Even on these farms, as wool prices fell, and the cost of labour and hay rose, less provision was made for feeding sheep and lambs, demesne pasture was often leased rather than being used for the lord's stock, the regular inflow of fresh stock was stemmed, and labour inputs in shepherding were reduced. Nor was it simply a matter of the quantity of inputs changing, for so too it seems did the quality of fodder, the nature of pasture that was provided, and the efficiency of labour. The relative importance of these factors presumably varied from one estate to another and from manor to manor, yet all of them were likely to have affected the productivity of sheep.

⁷¹ R. Lock (ed.), *The court rolls of Walsham le Willows, 1351–99* (Suffolk Rec. Soc., 45, 2002), pp. 37, 99. See also pp. 132, 197 in this volume, and Lock (ed.), *Court rolls of Walsham le Willows, 1303–50*, p. 293.

⁷² Stephenson, 'Productivity of medieval sheep', p. 87.

⁷³ J. P. Bischoff, "I cannot do't without counters":

fleece weights and sheep breeds in late thirteenth and early fourteenth century England', *Agricultural Hist.* 57 (1983), pp. 142–60; M. L. Ryder, 'Medieval sheep and wool types', *AgHR* 32 (1984), pp. 23–8; Stephenson, 'Productivity of medieval sheep', pp. 32–3, 127–9.

If managerial changes on demesne farms were of paramount significance in determining trends in the productivity of sheep, then it must be questioned whether these trends were replicated throughout the pastoral economy of late medieval England. We may not have data of comparable quality for the productivity of non-demesne flocks, which must have formed a large proportion of the total ovine population of England in the century after the Black Death, but several speculative points about the management of these sheep can be made. For instance, it seems unlikely that commercial peasant producers would have been able to afford to store their wool from one year to the next, so that selling old, lighter wool was hardly a realistic option for them. Some peasants had sizeable flocks, but many probably owned only a handful of sheep; indeed, among those making wills in Burwell (Cambs.) in the 1440s and 1450s were men such as John Payntor, who bequeathed four ewes, four lambs, and two other sheep, and John Rolff, who bequeathed five ewes and five lambs.⁷⁴ Smaller flocks must have been easier to observe and keep in reasonable health, and peasants and village shepherds probably had more incentive to manage their sheep with care in the later middle ages than many of their seigniorial counterparts. Access to sufficient grazing may well have been problematic for tenants at times, yet the lord of Halesowen (Worcs.) had been willing to licence numerous enclosures between 1350 and 1450, and it was only after about 1440 that the fixing of stints for pasture became commonplace in the West Midlands.⁷⁵

Nor are we entirely without plausible indications of the productivity of non-demesne sheep. For example, the ratio of ewes to lambs in the Burwell wills, which were proved in May and July respectively, suggests that villagers could achieve lambing rates of 100 per cent and keep subsequent levels of mortality to a minimum. Furthermore, zooarchaeologists report that the size of medieval sheep, as measured by the width of surviving bones from sites including Lincoln, Closegate in Newcastle, and Launceston Castle (Cornwall), hardly changed at all between the thirteenth and the fifteenth centuries, which is not what we would anticipate if sheep were generally as undernourished as they seem to have been on many demesnes after the Black Death.⁷⁶ More generally, even though prices of livestock and wool were affected by a wide range of factors, it might be expected – if the wool yield per fleece on every late medieval animal declined as decisively as it did on demesne farms – that the value of wool would rise relative to the cost of a sheep.⁷⁷ However, as Figure 9 shows, the relative price of wool in fact remained remarkably stable in the century after the Black Death.

Stephenson was very keen to demonstrate that the management of medieval sheep was far from primitive.⁷⁸ The evidence presented in this essay suggests that while medieval flock management could be extremely good, the quality of management and the level of care depended to a great extent on economic circumstances. This plainly had consequences for the productivity of livestock, but it also illustrates the broader point that – by making decisions about the most

⁷⁴ Northeast (ed.), *Wills of the Archdeaconry of Sudbury*, pp. 58, 397–8.

⁷⁵ C. Dyer, 'Farming practice and techniques: the West Midlands', in Miller (ed.), *Agrarian History*, III, pp. 226, 238.

⁷⁶ S. J. M. Davis and J. V. Beckett, 'Animal husbandry and agricultural improvement: the archaeological evidence from animal bones and teeth', *Rural Hist.* 10

(1999), pp. 10–12.

⁷⁷ For a similar use of animal and product prices as an indicator of productivity, see M. Overton, *Agricultural revolution in England: the transformation of the agrarian economy, 1500–1850* (1996), pp. 115–6.

⁷⁸ Stephenson, 'Productivity of medieval sheep', pp. 44, 49, 79, 88–9, 257.

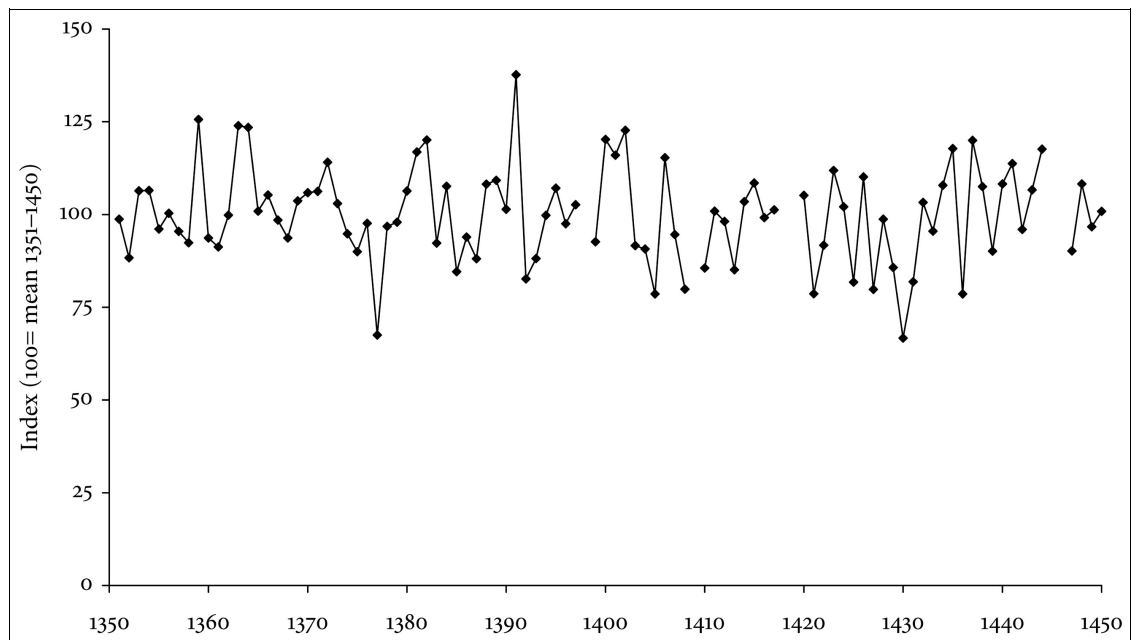


FIGURE 9. Index of wool prices relative to the price of wethers, 1351–1450.

Source: Farmer, 'Prices and wages', pp. 508–14.

profitable level of inputs to use – commercial farmers often chose not to maximize yields. The implications of this are by no means restricted to medieval pastoral husbandry, for historians of all periods tend to rely on yields as a means of assessing agricultural progress or backwardness. Those seeking indications of agricultural or managerial progress are usually drawn to periods of rising productivity, perhaps most strikingly in the ongoing debate about the timing of the agricultural revolution. Conversely, low and declining yields are frequently thought to be symptomatic of technological inadequacy or ecological crisis, as in the early fourteenth century. But the evidence of late medieval sheep farming – and indeed the discretionary adoption of arable techniques such as weeding, manuring, marling, and legume cultivation during the middle ages and beyond – demonstrates that yields are an inadequate guide to either progress or crisis. Medieval and early modern farmers were perfectly capable of producing high yields, but only when they found it in their interests to do so.⁷⁹ For many, low yields were in fact the result of rational choice; techniques for raising productivity were known, but were simply abandoned or used less intensively as economic circumstances deteriorated. As one Essex farmer put it in the late nineteenth century, making wheat pay at depression prices was 'no mystery at all': the key was to produce only 'fairly good' crops 'at a minimum of cost'.⁸⁰

⁷⁹ See, for example, Stone, 'Medieval farm management'; and P. Glennie, 'Continuity and change in Hertfordshire agriculture, 1550–1700, II: trends in crop yields and their determinants', *AgHR* 36 (1988), pp. 145–61.

⁸⁰ E. H. Hunt and S. J. Pam, 'Managerial failure in late Victorian Britain? Land use and English agriculture', *EcHR* 54 (2001), p. 259.