# Chapter 3
# The Medieval Grain Harvest

## 3.1 Climatological Significance

> St Iimes [James] willeth husbandes, get reapers at hande:
> the corne being ripe, doe but shead as it stande.
> Be sauing and thankfull, for that god hath sent:
> he sendeth it thee, for the selfe same entent.[1]

Thomas Tusser's instructions for a successful grain harvest – to assemble the reapers when the maturity of the grain approaches, around St James (25 July, Old Style), and to harvest when the grain is ripe, because otherwise the farmer risks to lose his harvest to shedding – date to mid-sixteenth-century Suffolk. However, they could as well be considered a blue-print for the harvest in the Middle Ages or indeed for the cutting of the grain 300 years later, at the eve of the Industrial Revolution, before the old structures were overturned by the use of machinery. In 1774 Stephen Frost, farmer at Langham in Norfolk, still tried to determine the best timing for the harvest with the object to avoid loss by shedding and remarked in his diary for the week of the 21–27 August:

> Mem: Began to cut my Whate [sic] too late which is in general the case, but for the future begin when the Ear turn Browne [sic] and carnel [sic] tolerable hard and pay no regard to the Straw but shock it well and let it stand some time which will prevent a great loss on the Ground which often happens.[2]

Also Tusser's following verses generally apply to the medieval as well as early modern conditions:

> Reape well scatter not, gather cleane that is shorne:
> binde fast, shock apace, pay the tenth of thy corne.
> Lode saife, carry home, lose no time, being faier:
> goife iust, in the barne, it is out of dispaier.

[1] Tusser, A hundreth good pointes of husbandrie, point 96. Thomas Tusser lived in Suffolk as a farmer, when he wrote the text in the mid-1550s.

[2] NRO, MC 120/07, 21–27 August 1774.

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> This done, set the pore ouer all for to gleane:
> and after thy cattel, to eate it vp cleane.
> Then spare it for pasture, till rowen be past:
> to lengthen thy dayrey, no better thou hast.
> Then welcome thy haruest folke, seruauntes and all:
> with murth and good chere, let them furnish th[i]ne hall […].[3]

Pre-industrial societies could not afford waste and would aim for a clean harvest process, nor could they – especially in England's maritime climate – afford to lose time during harvesting. As long as the corn was not gathered in or well stacked, it was at risk from the changeable weather. Therefore, when Tusser recommends to be 'thankful, for that god hath sent' he merely states the obvious for his contemporaries, medieval predecessors and early modern successors.

As long as the grain was harvested by hand, to reap or mow it at the right time was crucial. In a dry summer, the time window for cutting wheat did not exceed eight to ten days after ripening. During the first half of the nineteenth century a shift occurred from cutting the cereals at the dead-ripe, but not over-ripe, stage, to cutting at the (reap)-ripe stage.[4] If the crops became over-ripe, the kernels would be knocked off the ear when handled and would be lost to the ground.[5] A common threat in medieval as well as early modern times was the loss from shattering and shedding. In 1774 Stephen Frost of Langham in Norfolk still tried to determine the optimum harvest time, for avoiding harvesting too late with the associated shedding. On the other hand, harvesting too early would reduce the nutrition in the grain and lead to spoiling.[6]

Not only was the corn during the harvest time subject to the vagaries of the weather, but the quantity and quality of the harvest itself were largely the result of the prevailing weather conditions, rainfall and temperature, during the growing season. Indeed the main determinant for the time when the grain reached maturity and thus for the onset of the grain harvest, was the mean temperature during the growing season. The decision to start the harvest was based so closely on the phenological development of the corn crop, that the information can be used as a phenological proxy. The reconstruction of temperature in eastern England during the medieval period using this series is described by Pribyl et al. (2012) and is expanded upon in Chap. 5.

Several annually resolved temperature reconstructions for the time after 1450 have been based on the close connection between the phenological phase of the grain, harvesting and the mean growing season temperature. Pfister pioneered the field and used grain harvest-related data from the seventeenth century onwards to reconstruct temperatures in the Swiss Mittelland.[7] Brázdil and Kotyza included fifteenth-century information on the grain harvest in the Louny district in their

[3] Tusser, A hundreth good pointes of husbandrie, point 97–99.

[4] Collins, Harvest technology, 456, 465.

[5] Ault, Open-field farming, 28.

[6] Ault, Open-field farming, 28.

[7] Pfister, Getreide-Erntebeginn und Frühsommertemperaturen.

multi-proxy reconstruction for the Czech Lands.[8] Tarand and Kuiv reconstructed mean summer temperatures from rye harvest dates in the Baltic area 1671–1949[9] and Nordli's reconstruction of nineteenth-century Norwegian May–August temperatures is based on the barley harvest.[10] Možný et al. reconstructed March–June temperatures in the Czech Republic back to 1501 based on the winter wheat harvest date.[11] Work for western Hungary on vine and grain harvest dates was also undertaken by Kiss et al.[12] Wetter and Pfister analysed a series of grain harvest dates dating back to the fifteenth century stemming from the records of the hospital in Basel, which owned estates in the Basel region in Switzerland, in south-western Germany and in the (French) Alsace.[13] The reconstruction presented in this book, is the only reconstruction based on cereal harvest dates for the British Isles and currently the only such reconstruction stretching as far back as the thirteenth century.

## 3.2 Management and Accounting Practices

In the Middle Ages and early modern times the grain harvest marked the climax of the agricultural year. The people depended largely on regional supplies as foodstuffs for the following year and had almost no technological means at their disposal to rescue a harvest spoiled by weather. Drying ovens, for example, could cope with some quarters of wet grain but never with a whole harvest.

Thus a smooth run of the harvest for maximum efficiency was guaranteed by local custom and village by-laws. Labour was short during harvest time, so every able-bodied adult was obliged to work on the fields. To ensure the labour supply the villagers were forbidden to leave their community during the harvest season. The lord could demand labour services from his customary tenants in the form of day works, *opera*, and additional boon works, *precariae*. The tenants in turn would be entitled to take meals at the lord's table during these harvest works. The lord also had the priority for hiring casual labour in the village. This could cause some difficulty for the customary tenants to reap their own crops.[14] Towards the end of July or the beginning of August usually seven or eight wardens of autumn were chosen, they did not answer to the lord, but ensured a regulated harvest process of the village community.[15] The harvesting of the demesne land, which usually lay intermingled

[8] Brázdil, Kotyza, History of weather and climate (1000–1500), 143–151.

[9] Tarand, Kuiv, The beginning of the rye harvest.

[10] Nordli, Reconstruction of nineteenth century summer temperatures in Norway.

[11] Možný et al., Cereal harvest dates.

[12] Kiss et al., Reconstructed May–July temperatures.

[13] Wetter, Pfister, Spring-summer temperatures.

[14] Ault, Open-field farming, 28–34, Bennett, English manor, 110–111.

[15] Ault, Open-field farming, 60–63.

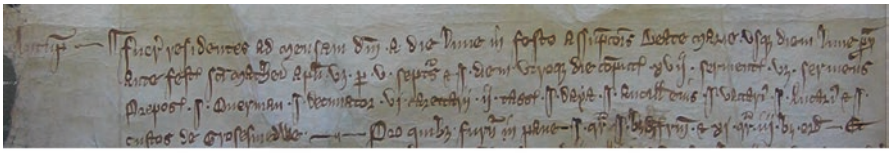

**Fig. 3.1** Hindolveston NRO, DCN 60/18/23: *autumpnus*/harvest account for 1323. During this harvest 17 workers ate at the lord's table from the feast of the Assumption of the Blessed Virgin Mary (AM) [15th August] which fell on a Monday, to the Monday before the feast day of the Apostle Matthew [19 September] for five weeks and one day

with other holdings in the open fields, was under surveillance of the hayward or *messor*, a manorial officer.[16] The grain harvest was a communal activity.[17]

In the manorial records the period 1 August to 29 September, St Peter in Chains to Michaelmas, would usually be referred to as *autumpnus* (autumn), the harvest season. However, the real, variable date of the beginning of the grain harvest, which would relate to the cutting of the winter corn, wheat and rye, was recorded in some manorial accounts. The custom was widespread in northern East Anglia, as the information is to be found in the rolls of Norwich Cathedral Priory, the Abbey of St Benet's of Hulme and St Giles's Hospital of Norwich. It also appears in the *compoti* for the Norfolk manors of Lewes Abbey, Ramsey Abbey and the Le Strange family of Hunstanton, and at least occasionally in the rolls of Castle Acre Priory and also in the Suffolk accounts of the Abbey of Bury St Edmunds. This might reflect a regional preference, since neither the Winchester Pipe Rolls, nor the manorial accounts of the manor of Cuxham belonging to Merton College in Oxford, or the Bolton Priory *compoti* list the actual date of the grain harvest.[18]

Many of the East Anglian accounts, especially the Norfolk *compoti* of Norwich Cathedral Priory, that record the harvest date, do so in relation to the cost and expenses of the harvest. The information can be found at several places in the rolls: the *autumpnus* account, amongst other things, relates the cost of the lord's table, which was maintained for the permanent estate labourers, the *famuli*, the reeve, the hired labourers and the customary tenants performing their services during the harvest time.[19] The dates for opening and closing of the lord's table, and consequently for the harvest are given (Fig. 3.1). The account rolls of Norwich Cathedral Priory document the start of the lord's table until 1389–1390. After 1349–1350 the date of

[16] Bennett, English manor, 178–180.

[17] Evans, The farm and the village, 65.

[18] Harvey (ed.), Manorial records of Cuxham, 163–604, Kershaw, The Bolton Priory *compotus*, 35–570. The manorial accounts of the Bishopric of Winchester were checked for the years when the rolls were edited and published, in: Hall (ed.), The Pipe Roll of the Bishopric of Winchester, 1208–1209; Holt (ed.), The Pipe Roll of the Bishopric of Winchester, 1210–1211; Page, The Pipe Roll of the Bishopric of Winchester, 1301–1302 and idem, The Pipe Roll of the Bishopric of Winchester, 1409–1410. Stern, A Hertfordshire demesne, although considering a wide range of climate related agricultural activities, never refers to the grain harvest date.

[19] Dyer, Food consumption, 212. The lord's table formed a high point in the diet of the workers.

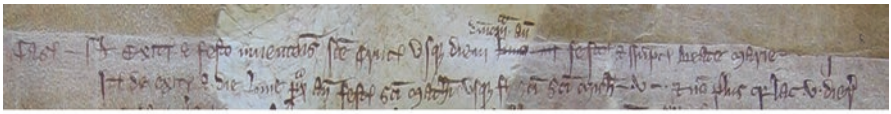

**Fig. 3.2** Hindolveston NRO, DCN 60/18/23: dairy account for 1323. Cheese was produced until Sunday before the feast of the Assumption of the Blessed Virgin Mary (AM) [14 August]. First the scribe had noted that cheese was produced until the feast itself [15 August], but since on that day it was already destined for the harvesters, he scrupulously erased his words 'Monday in' and replaced them with 'Sunday before'. Normal cheese production was resumed with the last day of the harvest, Monday before the feast day of the Apostle Matthew [19 September]

the closing of the lord's table is normally omitted; it can be roughly determined by using the length of the harvest. From the mid-1350s onwards, though, the references on the duration are usually rounded up or down to the whole week; a trend that started after the Black Death. This also applies to other indications of the harvest length throughout the account roll. When the account lists the work units performed and the quantity of food consumed by the workers, it sometimes appears as if a high number of workers cut the harvest within one day; this is an accountancy device facilitating the counting of works performed and the food, grain, dairy produce, fish, meat and ale, consumed during the harvest.[20]

For the food at the lord's table, produce of the manor was used as much as possible. Hence cheese, butter and milk produced during the harvest time would go into the provision of the harvest workers. The cheese account lists the date after which the dairy products were not destined for the market or merely the landlord's household any more, but for the enlarged lord's table, as well as the date when commercial cheese and butter making was resumed (Fig. 3.2). This information is in accordance with the period of the lord's table recorded in the *autumpnus* account. Usually the normal dairy production would stop on the day of the beginning of the harvest or one day before and would resume at the end of the harvest, or one day later. At the manors of Norwich Cathedral Priory a great move towards the farming out of the dairy sector occurred in 1327–1328, thereafter the harvest information ceases to be given in the cheese accounts. It is the data supplied in the cheese accounts that were used by Hallam in his comparison of timing and quantity of the grain harvest.[21]

With the accounting reform in 1354–1355, works accounts become common in the rolls of Norwich Cathedral Priory. Under *opera autumpnalia* the harvest works are detailed. Start and end of the harvest, duration and the number of days actually worked and *opera* performed, as well as *opera* performed by and numbers of mowers and reapers are given (Fig. 3.3). The direct reference to the end of the harvest was increasingly omitted from 1363–1364 onwards and had dropped out totally by the early 1370s, but indirectly the information is supplied in the rolls since the duration of the harvest is always noted down. As long as parallel data on the start of the

[20] Stern, A Hertfordshire demesne, 28–29.

[21] Hallam, The climate of eastern England 1250–1350, 125.

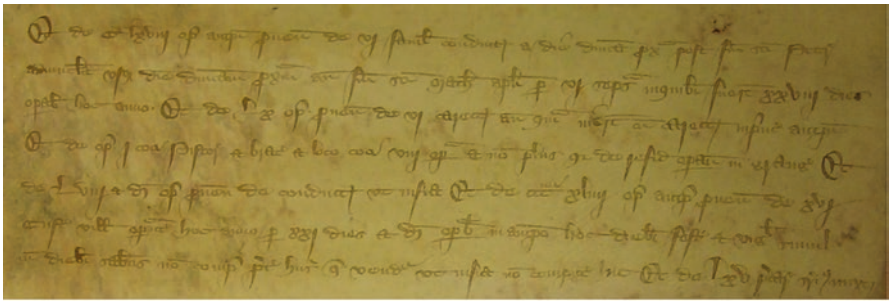

**Fig. 3.3** Sedgeford NRO, LEST/IB 24: first part of *opera autumpnalia* for 1357. Works performed by the various groups of harvesters are given. For the six *famuli* the harvest time is specified to have lasted from Sunday after St Peter in Chains (SPC) [6 August] until Sunday before the feast of the Apostle Matthew [17 September], for six weeks, which included 28 actual working days. The information is identical with the harvest data given in the *autumpnus* section of the same account roll

grain harvest are provided in the *autumpnus* account and the *opera autumpnalia* account, this information is identical. From 1390–1391 onwards the works accounts alone state the harvest date; the information in this section is available until the end of demesne farming at Norwich Cathedral Priory.

Indirect references to harvest date or direct references on the harvest duration are often to be found in the section on wages and liveries: *corrodium, vadium* and *liberatio famulorum*. The former two refer to food allowances and other payments to the sergeant or other officials, such as the keeper of the grange. If employment of the officials was for the whole year, allowances would stop during the tenure of the lord's table. The duration of the suspension of corrody and *vadium* is coherent with the harvest duration specified in the *autumpnus* account. Early corrody entries sometimes detailed the date of beginning and end of food allowances. *Corrodium* paragraphs appeared the last time in the manorial accounts of Norwich Cathedral Priory in 1353–1354. *Vadium* entries emerged earlier for some estates, then gained ground in the early 1350s and replaced the corrody with the accounting reform 1354–1355. The *liberatio famulorum* paragraph lists food allowances to the permanent staff of the manor; the information is phrased in the same way as under the *corrodium* and *vadium* entries. Occasionally the livery paragraph is headed by another name such as *multura*, or is subsumed under the barley entry in the grange account, but it was made from the thirteenth to the fifteenth century.

The harvest data in the *compoti* of the supplementary series, the manorial accounts of St Benet's Abbey of Hulme, St Giles's Hospital, Bury St Edmunds Abbey and further single manors, are organized along similar lines; only dairy accounts are generally missing. In the rolls of St Benet's the start, end and duration of harvest, the expenses for the manorial staff and partly their time in the harvest, and the actual work days within the harvest is given under *autumpnus*. The duration of the harvest is repeated under the headings *vadium* and *liberatio*, it is usually rounded up or down to the full week. Only the Shotesham accounts 1352–1353 and

1353–1354 possess a paragraph on *opera autumpnalia*, which details harvest dates.[22] The earlier run of hospital accounts used in this study was produced in the 1330s and 1340s. The harvest date is to be found in the *autumpnus* section, together with the end date and duration. References to harvest duration also appear under *vadium* and *liberatio*. The later series in the 1390s and 1400s still features a thorough *autumpnus* account, and occasionally also specify start and duration of the grain harvest under *opera autumpnalia*. The *compoti* of Hinderclay around 1300 give the harvest date under in both of these paragraphs, in later accounts it is only the harvest duration under *autumpnus, liberatio* or *vadium*. For the manor of Hunstanton the harvest start and end date and duration are recorded in the *autumpnus* section. The manorial staff that were employed are listed as well as the number of labourers hired for the harvest and the day when they began working.

The Heacham accounts cluster around 1300. They are very detailed and the exact time on the fields for the individual workers and groups – the reeve, overmen, the c.40 hired workers, the carters, the thatchers and finally the shepherd, who brought the sheep to feed on the stubble of the cleared fields – can be distinguished under *autumpnus* (Fig. 3.4).

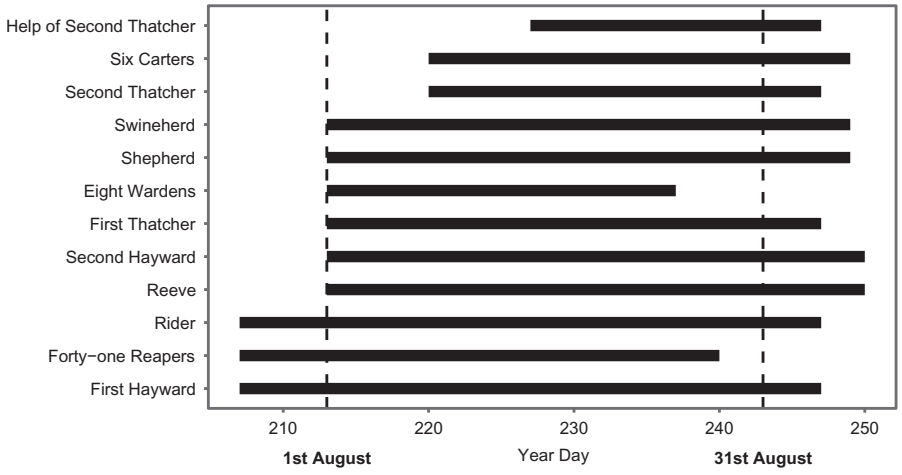


**Fig. 3.4** Heacham: harvest 1296–1297. Plotted is the time various labourers spent harvesting. The harvest started 26 July with one hayward/*messor* and 41 harvesters. They were joined by the reeve, a second hayward/*messor* and a thatcher on 1 August, the official start of the harvest season in medieval England and in 1297 probably the start of the cutting of the spring corn, which was overseen by the second hayward/*messor*. Later carters came in as well as more thatchers. Most of the cutting must have been finished by the 28 August, when the 41 reapers finished work

[22] NRO, DN/EST 11/05 for 1352–1353 and NRO, DN/EST 01/10 for 1353–1354. For other manors no such paragraph exists, or as for Flegg it does not list these items.

## 3.3 Data Density and Security

Of a total of about 1240 manorial accounts checked between 1256–1431, 645 rendered harvest dates: 413 until 1349 and 232 after 1350. Of the 645 dates, 561 come from estates belonging to Norwich Cathedral Priory (Fig. 3.5).[23] Data density is, of course, strongly linked to the document survival rate and to the form of management of the demesne land. The number of harvest dates from all sources is comparatively low until 1290, most of these data come from Norwich Cathedral Priory, a few from the manor of Fincham. The survival rate of Norwich Cathedral Priory accounts is high for the period c.1290[24] to 1330 when many harvest dates are available, although some gap years remain. The manor of Hinderclay adds a series of harvest dates spanning two decades around the turn of the fourteenth century, Kempstone gives information in the 1320s. The supply of Norwich Cathedral Priory harvest dates during the 1330s and 1340s is low, but it is reinforced by dates from

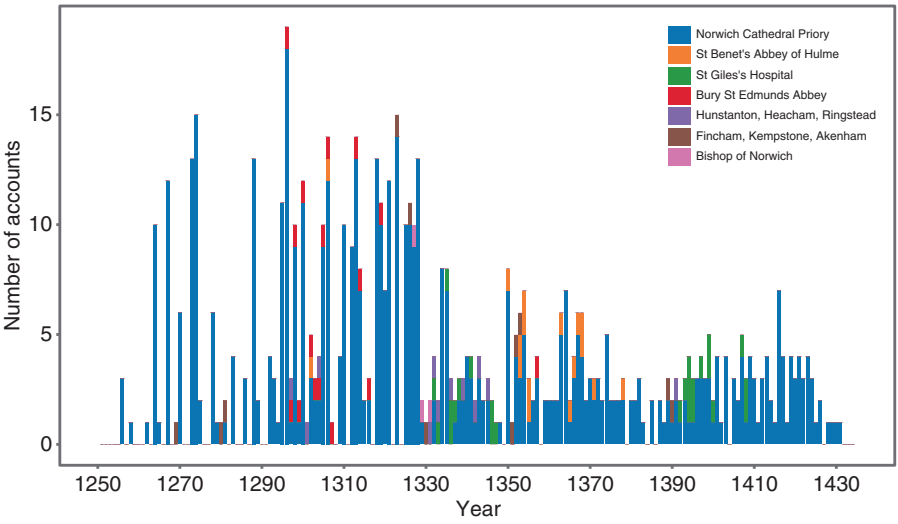


**Fig. 3.5** East Anglian harvest dates 1256–1431: number of harvest dates per year. Plotted are harvest dates used in this study and the various sources of data

[23] Including the few dates from the stray episcopal accounts in NRO, DCN 95.

[24] For 1291–1292 the account of Thornham is included in the Sedgeford roll, NRO, DCN 60/33/09, as the Hindolveston account is incorporated in the Hindringham account, NRO, DCN 60/20/08. The following year the Hindolveston information again is set in the Hindringham account, NRO, DCN 60/20/09. For those accounts it is assumed that the harvest date merely refers to the manor the accounts were primarily made for, Sedgeford and Hindringham, and no information or account has thereby been registered for Thornham and Hindolveston in this study. The administrative personal responsible for the agricultural affairs in the Hindringham/Hindolveston rolls 1291–1292 and 1292–1293 is partly met again in the Hindringham roll for 1294–1295, NRO, DCN 60/20/10, but not in the contemporary Hindolveston account, NRO, DCN 60/18/11.

Hunstanton and the manors of St Giles's Hospital. After 1350 the number of gap years in the cathedral data diminishes and a low but steady number of harvest dates per year comes from the cathedral priory until the early 1430s. These data are supported by information from the manors of St Benet's of Hulme in the 1350s and 1360s and from estates of St Giles's Hospital in the 1390s and early 1400s, the manor of Akenham in the early 1350s and around 1390; the 1380s are not well covered.

Data security for harvest information gained from manorial accounts is high. The repeated listing of identical climate proxy data throughout various sub-sections of the rolls, allows for the cross-checking of this information in the account itself. In years when a number of *compotus* rolls survives, further comparison of harvest date and length information is possible. The use of accounts from a variety of sources raises the reliability of the climate proxy information further, because manors of different landlords were subjected to differing administrative structures and management decisions.[25] Hence similar dates and trends in accounts of different provenance demonstrate the independence of the grain harvest date from human decision and underline its tight relationship with the phenological phase of the grain development. The supplementary series also fill in some gap years, for which no information is given by the accounts of Norwich Cathedral Priory (Fig. 3.5).

## 3.4 Potential Non-climatic Influences on the Harvest Date

While the harvest date was dependent on the phenological state of the grain and hence on the mean temperature during the growing season, radically and rapidly altered socio-economic conditions or agricultural practices could disrupt this close relationship. Harvesting was labour-intensive and to avoid a negative influence of a shortage of labour on the harvesting process, a whole set of rules was in place to ensure a secure labour supply at harvest time for the lord. It was difficult for the village population to leave their home during that period. The lord could fall back on customary labour services, the day works and boon works; the harvest boon works were among the last services to be commuted to money payments and ecclesiastical landlords were especially conservative by avoiding commuting services much longer than their lay counterparts. Additionally the priority for hiring local labour lay with the lord.[26] Manors close to towns and cities also benefited from hired labour of the town people. With the accounting reform at Norwich Cathedral Priory in 1354–1355 itinerant harvest workers, so-called cockers,[27] are traceable for the first time. Their appearance in the post-1350 period is linked to the disruption and labour shortage resulting from the demographic crisis. On Norwich Cathedral

[25] On the importance of choosing manors that were not all owned by the same landlord, Stern, A Hertfordshire demesne, 31–32.

[26] Ault, Open-field farming, 33–34.

[27] Ernle, English farming, 12.

Priory manors cockers were present primarily in the second half of the fourteenth century. Between 1390 and 1400 the number of works performed by them dwindled.[28] For trends in the harvest work force and on the manor of Gnatingdon in northwest Norfolk 1256–1431, see Appendix 3. In extreme and rare cases plague could aggravate or cause a severe labour shortage, so that fields might be harvested too late or not at all, as was to be observed in England in 1349.[29] However, this was a short-term influence, on the long run the negative demographic trend after 1350 had no impact upon the harvest date. Možný et al. have recently shown, that the relationship of harvest date and temperature during the growing season is merely weakened during periods of acute political and demographic stress, e.g. in times of war and their aftermath, due to their direct impact upon agriculture and the rural population.[30] The plague, though causing a population loss of about 30% or more in 1348–1349, did not eliminate agricultural knowledge in the English countryside. Large scale political disruption in Norfolk during the study period was rare. The Second Barons' War 1264–1267 left its traces in Norwich,[31] but seemingly did not disrupt harvesting on the manors of Norwich Cathedral Priory. The events of the attack of the citizens of Norwich on the cathedral priory did result in the loss of some archive material of the monks, but did not affect the countryside. During the Peasants' Revolt 1381 there was widespread upheaval in western and eastern Norfolk during early summer; only two harvest dates survive for this year, they come from manors removed from the uprising's epicentre.[32] A second rising in Norfolk in the following year, 1382, took place around Michaelmas, long after the start of the grain harvest, and was quickly suppressed.[33]

The Norfolk manorial economy was characterized by a good degree of agricultural specialisation: some manors grew no or very little winter rye, a few others no winter wheat. Before 1350 rye was common, but was then increasingly marginalized in the decades following the Black Death, and the acreages sown with wheat on the other hand remained stable c.1250–1449.[34] The relative proportions of winter crops to spring crops also vary from estate to estate as well as over time, and the influence of this varying composition of the annual harvest on the harvest date is more difficult to discern. Generally in a grain harvest constituted by the cutting of

[28] For example the manors Sedgeford and Gnatingdon used cockers from the mid-1350s to the early 1390s respectively the middle of the first decade of the fifteenth century. The numbers of works performed by them, varied strongly from none to 174, the highest numbers were reached in the 1380s (especially the late 1380s), after which they dwindled quickly. As in Gnatingdon, cockers helped in the harvests of Hindolveston until c.1406. On the other hand Martham did not turn to cockers after the 1360s. Often sharp alterations in the number of works done by cockers in the harvest were associated with changes of the manorial management personnel.

[29] Knighton, Chronicon, vol. 2, 100–101.

[30] Možný et al., Cereal harvest dates, 814–815.

[31] Blomefield, History of Norfolk, vol. 3, 52–53.

[32] In the northwestern Norfolk: Sedgeford, NRO, LEST/IB 37, and close to the marginal Breckland Great Cressingham, NRO, MC 212/10.

[33] Walsingham, Historia Anglicana, vol. 2, 70.

[34] Campbell, Overton, Norfolk Farming c.1250-c.1850, 54.

winter and spring crops, the winter crops would be ripe and harvested first and consequently their cutting would mark the start of the harvest. Of the winter corn, wheat would be ripe slightly earlier than rye.[35] In Norfolk wheat and rye must have reached maturity within a short space of time because in the eastern part of the county *maslin*, a wheat-rye mixture, was successfully grown.[36]

In the classical three-course-rotation – winter corn, spring corn, fallow – the crops are annually moved around the fields. This process would alter the microclimatic and soil condition for the growing grain,[37] but exerts no significant influence on the grain harvest date in a region as flat as East Anglia. Field names are difficult to trace to the Middle Ages.[38]

Harvesting methods were subject to change during the Late Middle Ages. Until the mid-fourteenth century all corn crops were reaped with a sickle in England (see front cover). From c.1300 onwards mowing instead of reaping was practised in the Low Countries and appears after the Black Death also more often in East Anglia.[39] Mowing was a more specialized harvest method and required training. It allowed for a quicker and less work-intensive harvest process, but increased waste and loss.[40] In the Norwich Cathedral Priory manorial accounts, one mowing work is expected to replace two and a half reaping works. The increased waste related to mowing ensured that it would be restricted to the cheaper grains, in Norfolk particularly to barley and oats.[41] In the eighteenth and the early nineteenth century wheat was still usually reaped, whereas barley and oats were mown.[42] Wheat was simply too valuable for risking a high loss during the mowing process. Sometimes rye, though cheaper, would also not be mown to preserve its long straw, which was useful in

[35] Ernle, English farming, 9. Concerning the predominant wheat varieties he also states that on light land red rivet or a lost white variety would be used, on heavy soils red or white pollard and on clay soils 'gray' wheat, ibid., 8.

[36] Campbell, Seigniorial agriculture, 221.

[37] Nordli, Reconstruction of nineteenth century summer temperatures in Norway, 206, states that a temperature reconstruction based on grain harvest dates, should ideally be using the dates of one crop from always the same field. However, agriculture can not operate according to those lines. In the Middle Ages the three-course-rotation was widespread (although the productive regions in eastern and northern Norfolk would be cropped in four years out of five (which could include up to three courses of barley), Campbell, Eastern Norfolk, 28–29, idem, Seigniorial agriculture, 267–271); and also in modern agriculture it is for various reasons advisable to change regularly the annual crops on the fields.

[38] The first *compoti* of Norwich Cathedral Priory which name the fields, where a crop was sown, appear after the reform of the accounts in 1354–1355; the naming becomes regular later.

[39] Stone, Medieval agriculture, 250. In Sect. 7.2 and Appendix 3 more details are given for the use of mowing in the grain harvest of Gnatingdon and Sedgeford.

[40] Rösener, Bauern im Mittelalter, 126–127 and Stone, Medieval agriculture, 250. According to Stone mowing was employed on the East Anglian manors of Hinderclay and Wisbech Barton in times of crisis or when grain prices were low.

[41] The accounts distinguish between *metere*, to reap (wheat), and *falcare*, to mow. The different methods are described in Ault, Open-field farming, 28.

[42] Mowing wheat was established in Norfolk between 1820 and 1837, Wade-Martins, Williamson, Roots of change, 116–117.


**Fig. 3.6** Carting grain. Luttrell Psalter, Lincolnshire, circa 1325–1340 (British Library, Add. MS 42130, f. 173v)

thatching.[43] The introduction of mowing with the scythe alongside reaping with the sickle was not relevant for the harvest date, and the grain cut at the beginning of the harvest, the winter corn, was subjected to a stable harvesting process. After cutting, the grain was bound into sheaves, these were dried before they were either carted to the barn or stacked in the field (Figs. 3.6 and 9.2). Good, dry weather during the cutting and drying time was essential, as wet grain is prone to spoiling. Hence rainfall would prolong the harvest; during very wet harvests the sheaves had to be untied again for allowing the grain to dry.

None of the abovementioned short and long-term factors and developments had an influence strong enough to disrupt the relationship between the East Anglian harvest dates and growing season temperature.

## 3.5 Dating the Harvest: Calendar, Work Management and Communication

Life in the Middle Ages was highly regulated by custom. The official harvest season in medieval England, *autumpnus*/autumn, stretched from St Peter in Chains (SPC), 1 August, to Michaelmas, 29 September.[44] The importance of 1 August was reinforced by this day also being Lammas Day, 'Loaf Day', when bread made from the first ripe wheat would be blessed. Ideally the harvest would fit inside the months August and September, and so many manorial accounts, especially from areas out-

[43] Campbell, Seigniorial agriculture, 220.

[44] Titow, Le climat à travers les rôles de comptabilité, 312.

side East Anglia, fall automatically back on these dates to circumscribe the harvest and no further specifications are given. Consequently such accounts reflect custom and do not provide any temperature proxy.[45] Manorial accounts that do list the real harvest start and end dates mostly do not define the date by numbering the days of the month, but employ the ecclesiastical calendar. This kind of dating relies on unmovable saints' days and other festivals, the date thereby falling on one of these feast days or the respective weekdays before or after the feast day.[46] As today the medieval days were organized in the seven-day week, which then began on Sunday.

### *3.5.1 The Ecclesiastical Calendar*

The important feast days around the beginning of harvest which could be used as reference points were St James (SJ) on 25 July, St Peter in Chains (SPC) or Lammas Day on 1 August, St Laurence (SL) on 10 August, and the Assumption of the Blessed Virgin Mary (AM) on 15 August. *In extremis* there were St Margaret (20 July, SM) as well as St Mary Magdalene (22 July, SMM) and the very late St Bartholomew (24 August). For detecting changes in the setting of the harvest dates, the data will be studied separately for the main archival collections and over four sub-periods 1256–1300, 1301–1350, 1351–1400 and 1401–1431.

On the manors of Norwich Cathedral Priory the years between 1256 and 1300 are marked by the predominance of harvests that commenced on a saints' day or other commemorative festival; these are 56.86% of all harvest dates. Among the aforementioned main feast days SJ is of some importance, representing 9% of the data. However, SPC attracts a strikingly high share: 41% (Fig. 3.7). SL and AM do not stand out, though this might be primarily due to the early harvests of this period.

Obviously custom weighed heavily upon the decision to set the start of the grain harvest on the cathedral priory estates. Convenience in accounting and/or dating might also have played a role, so that harvest dates were rounded to the feast days. SPC, being the official start of the *autumpnus* season, is clearly over-represented. 1256–1300 was a phase of early harvests and SPC appears to have fallen often within the range of days, when beginning to cut the grain was possible. Harvest onsets up to three or four days before and after SPC are very rare, so one can con-

[45] On the inclination of medieval people to allot to each month its proper, representative (agricultural) activity see Henisch, Medieval calendar year, 1–4, and especially on the European hay and grain harvest, ibid., 107–118. The standard *autumpnus* season is also employed in some of the manorial accounts of Norwich Cathedral Priory. The late North Elmham *compoti* 1391–1392 to 1410–1411, NRO, DCN 60/10/28-35, limit their information on the harvest date in the works account to the standard harvest season, although the duration of the harvest remains variable and hence reflects reality. On the other hand, in the works accounts of the Taverham rolls between 1362–1363 and 1373–1374, NRO, DCN 60/35/33-42, first the standard harvest season with the standard duration is named, but then the real start and duration are specified.

[46] Grotefend, Zeitrechnung des Deutschen Mittelalters und der Neuzeit, vol. 1, 81–83; Cheney, A handbook of dates, 15.

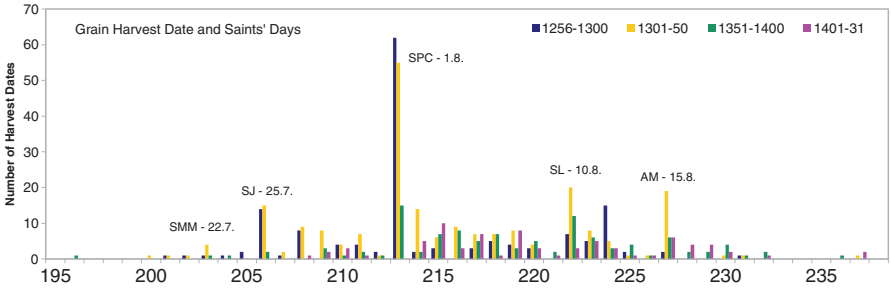


**Fig. 3.7** Norwich Cathedral Priory manors 1256–1431: harvest date and saints' days. Plotted are the dates of the start of the harvest over the sub-periods 1256–1300, 1301–1350, 1351–1400, 1401–1431. Important ecclesiastical festivals are marked

clude that harvests that could have started on those days were postponed or advanced to SPC. To a lesser extent a similar structure emerges for SJ. The days before this feast day and the immediately following day are underrepresented in the data. Among the very early harvest dates neither SM nor SMM are prominent. The comparatively small number of harvests starting after SPC shows no tendency to fall on a feast day; this indicates that once within the official harvest season, no preference to special days was given.

In the first half of the fourteenth century 50.45% of the harvest dates coincide with a festival. SJ now holds 7%, SPC 25%, SL and AM each 9% of the data (Fig. 3.7). Although about half of the harvest dates are still feast days, the data are now more equally distributed. SPC exerts less pull upon the harvest dates than in the fourteenth century. The postponing of the harvest for up to three days for being able to start on SPC, was still frequent. The advancing of the harvests for matching the official onset of the *autumpnus* season, however, was no longer common practice, as is confirmed by the adequate representation of the days between the 2 August and 7 August. The data around SL display a similar pattern: villagers would wait one to two days for starting harvesting on SL, but usually would not advance harvests. The situation is somewhat different for SJ and AM. For SJ postponing the harvest for up to two days or advancing it one day, seems to have been possible. AM, lying at the end of the period when harvests could start, achieves its high share of harvest dates by the cutting of the grain being postponed as well as advanced for up to two days. Mid-August in the Julian Calendar was indeed very late to begin harvesting (Gregorian Calendar: 23 August) and apparently efforts would be made not to overstep this last important feast day. Apart from AM marking a kind of mental borderline, the fact that after this date weather conditions would rarely improve and contribute to a proper ripening of the grain, might have played a role in the tendency to avoid starting the harvest after AM.

Between 1351 and 1400 the percentage of harvests beginning on a feast day falls to 32.11%. Since this is a period of later harvests SJ represents merely 2% of the

data. SPC takes a share of 14%, SL 10% and AM 6% of the data (Fig. 3.7). Obviously the saints' days and festivals were losing importance. SJ does not stand out; SPC attracts harvest dates that might otherwise have fallen up to two or three days before and one day later; for SL the harvests appear to have been sometimes postponed for one day. The same applies to AM, which does not mark the latest date for starting the harvest any more. The drop of data falling on feast days might not merely be due to a change in practice, but to a certain degree also to the surviving data being more evenly distributed over the half century. While the absolute amount of data is lower than before, there are fewer gap years and the amount of information available per year is quite steady.

This trend continues into the fifteenth century: although fewer data are available from Norwich Cathedral Priory, these data are spread evenly over the years. Merely 11.69% of the harvest dates now fall to a saints' day or festival. Harvest dates are generally late, none occur on SJ or the once so popular SPC (though there are some early harvests, starting in late July). SL represents 4% of the data, AM 8% (Fig. 3.7). It appears that for one or two days before AM, harvests might have been postponed, but there are not enough data for a conclusive analysis. For SL neither postponing nor advancing harvests was involved. Generally the data are now evenly distributed over the days and feast days hold no special importance any more.

The archival collections of the Abbey of St Benet's of Hulme and St Giles's Hospital contain too few data for allowing more than just the highlighting of trends. The manors of St Benet's supply data between 1350 and 1378; a higher percentage of harvests began on a feast day than would be expected from a random sample. The result is ambiguous to a certain degree, because some non-feast days are also over-represented. However, 47% of the surviving data are feast days (SPC and SL); consequently saints' days and festivals played an important role in setting the harvest date on the estates of St Benet's of Hulme. Of the two groups of harvest dates from St Giles's Hospital, the early group, 1332–1348, also displays the typical weighting towards feast days, which absorb 45.45% of the data. However, this is almost entirely due to the information from Hardley, on the other manors harvest dates coinciding with festivals are very rare. In the later group, 1392–1408, a certain degree of predominance of feast days is still visible: they take up a share of 28% of the harvest dates. The harvest dates of St Benet's and the manor of Hardley highlight the important role that feast days played in fixing harvest dates within the possible phenological time range.

As can be seen, the preference to start the grain harvest on saints' days and other festivals was widespread until the mid-fourteenth century; the custom existed on the manors of Norwich Cathedral Priory, on those of St Benet's' Abbey of Hulme and on some of the hospital's lands. Over the course of time, on the manors of Norwich Cathedral Priory after the mid-1330s, but latest after the Black Death, this preference was weakened until it finally almost disappeared around 1390. Consequently the error created by adjusting the harvest date to a feast day diminishes during the period studied.

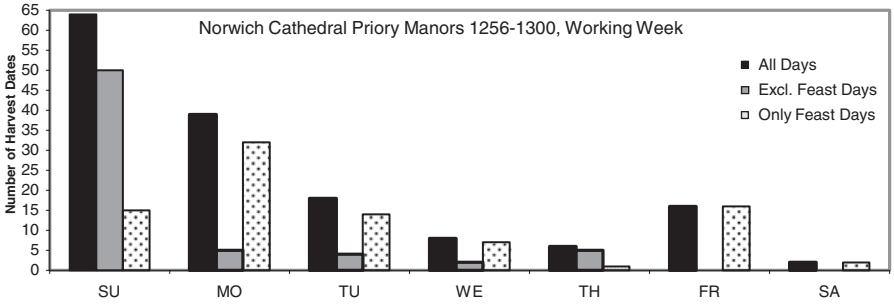


**Fig. 3.8** Norwich Cathedral Priory manors 1256–1300: harvest dates and weekdays. Plotted are all harvest dates, harvest dates excluding the harvests that started on a feast day, and the harvest dates that fell on a feast day

### *3.5.2 The Working Week*

In the second half of the thirteenth century the beginning of the week, Sunday and Monday, was preferred for the start of the grain harvest on the manors of Norwich Cathedral Priory (Fig. 3.8). The share of the individual weekdays drops steeply from Sunday with 43% to Thursday with 4%, only to constitute a local high again on Friday with 10%. Virtually no harvest ever started on a Saturday.

The notion that custom preferred Sundays as the start of reaping is underlined when only the harvest dates that did not fall on a feast day are considered. Of those, 75% are Sundays. Mondays to Thursdays represent between 3 and 8% of the data; Fridays and Saturdays do not occur at all. On the other hand the harvest dates that coincided with feast days were more equally spread over the week. 38% of them fell on Mondays, 18% on Fridays, 17% on Sundays, and 16% on Tuesdays.

Custom and practicality favoured harvests starting at the beginning of the week. The further the week progressed, the fewer harvests were started. If the time window for cutting the grain was too narrow for waiting for the new week to begin, Friday was chosen. Saturdays were avoided: so short before Sunday, one would simply wait one more day.

The four feast days, SJ, SPC, SL and AM, were also favoured harvest dates (56.86%). They come at intervals of seven to ten days and in most years did not coincide with Sundays. Consequently they provided convenient ‘stepping stones’ within the week for the start of such harvests, for which waiting for the next Sunday would have been too long and too risky. In this structure a harvest date would be pushed at maximum for three days, but usually less, to coincide either with a Sunday or a feast day. Most likely this would be handled by postponing the harvest, as the sudden rise of Sunday as harvest day and the consequent successive drop in percentages down to Saturday demonstrates.

Results very similar to the years 1256–1300 are obtained for the cathedral priory manors in the first half of the fourteenth century. However, two sub-periods can be distinguished. The change occurred in the mid-1330s. During 1301–1336 the

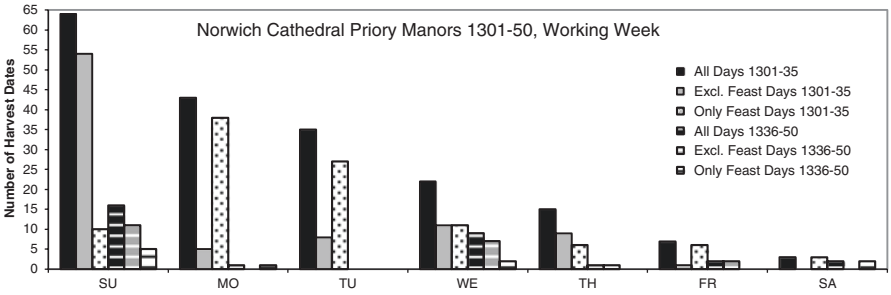


**Fig. 3.9** Norwich Cathedral Priory manors 1301–1350: harvest dates and weekdays. As Fig. 3.8 but for the sub-periods 1301–1335 and 1336–1350

structure of the data strongly resembles that of 1256–1300. The overall drop in percentages from Sunday to Saturday is slower and smoother, but more continuous than in the preceding period. 33% of the harvests now began on a Sunday, 9% less than before. The local high on Friday has disappeared, probably because the percentage of the harvests begun between Monday and Thursday has increased (Fig. 3.9).

That the importance of Sundays was lessened to some degree is underlined by the non-feast day harvest dates. 61% of those fell on a Sunday, a drop of 14% compared to 1256–1300. Mondays were avoided, probably harvests that would have ideally begun on this day were started on the preceding Sunday. A small local high is presented by Tuesday to Thursday for the harvests that could not be adjusted to the beginning of the week. Very few harvests began on Fridays and Saturdays. Harvests that began on a feast day (50.45%) also tended to fall to the beginning of the week: Mondays predominate. From Wednesday onwards percentages are low and steadily fall to Saturday. Overall, Sundays still occupy the most dominant position, with a strengthening of the days Monday to Thursday.

This pattern is altered in the mid-1330s; unfortunately there are comparatively few data available for the period 1336–1350. The predominance of Sundays, especially among the non-feast days, is diminished further. Mondays and Tuesdays hardly occur as days for the beginning of the harvest. However, the mid-week high on Wednesdays, is clearly developed, due to the non-feast day dates (Fig. 3.9). On the whole the percentage of harvest dates coinciding with feast days has abruptly fallen to merely 32.26%.

On the estates of Norwich Cathedral Priory the main characteristic of the pattern – starting to cut the grain early in the week – is carried over to the next period, 1351–1400. A shift takes place at the end of the 1380s. From 1351 to 1389 the percentage of harvests starting on a feast day is already relatively low at 36.36%. The dominance of Sundays over other week days is strengthened, they account for 47% of the data. Mondays and Tuesdays are considerably less important than in the preceding period, but the mid-week high, on Wednesdays and Thursdays, remains. The importance of Sundays is accentuated in the non-feast day data; feast day har-

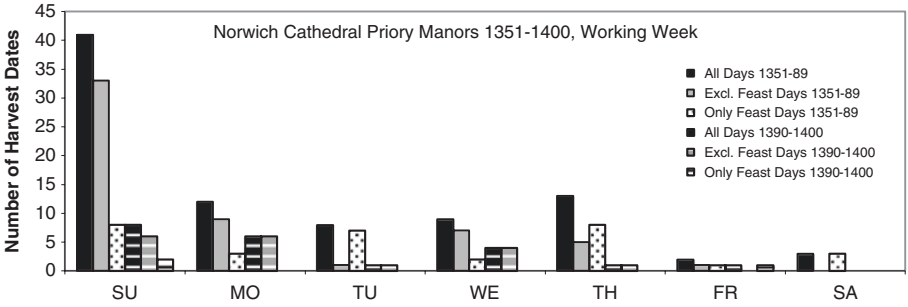


**Fig. 3.10** Norwich Cathedral Priory manors 1351–1400: harvest dates and weekdays. As Fig. 3.8 but for the sub-periods 1351–1389 and 1390–1400

vest dates on the other side tended to coincide not only with Sundays, but also Tuesdays and Thursdays. Friday and Saturday remain underrepresented in both groups (Fig. 3.10).

In the final decade of the fourteenth century feast days merely represent 14.29% of the harvest dates. At such a low percentage they no longer exercise an influence on the distribution of the harvest dates over the week. Although there are relatively few data available, it is obvious that Sundays and Mondays are now of almost equal importance and that the Wednesday high is well developed. In the non-feast day harvest dates the overall situation is consequently closely mirrored: Sunday and Monday both achieve 33% and Wednesday 22% (Fig. 3.10).

The growing importance of Mondays in the last years of the fourteenth century led the way to the emerging predominance of this day in the fifteenth century. Whereas now 52% of the harvests began on a Monday on the priory manors, only 18% did so on a Sunday. Another 14% fell on a Wednesday, so the mid-week high persisted. Tuesdays and Saturdays are days unfavourable for the start of the harvest (Fig. 3.11).

Although harvest dates coinciding with feast days are very few in number (11.69%), they mirror the predominance of Monday and emphasize the importance of the beginning of the week, because none of them coincide with a Thursday, Friday or Saturday.

The data for St Benet's of Hulme 1350–1378 displays the strong inclination to start the harvest on a Sunday; 74% of the harvests that did not coincide with feast days fell on a Sunday. The rest of the dates occur towards the middle or the end of the week. The feast day harvest dates often corresponded with Thursdays. In this way a local high of mid- to end-week for the harvests that could not wait until the following Sunday was constructed. The harvests on the manors of St Giles's Hospital 1332–1347 also tended to start primarily on Sunday. However, Friday is also well represented. Both days figure strongly in the non-feast day data. On the other hand the feast day data could fall to any day of the week, Tuesdays stand out to some extent. During the later period, 1392–1408, the situation changed: feast days figure weakly in the data (28%) and of the non-feast day harvests 80% were Sundays and

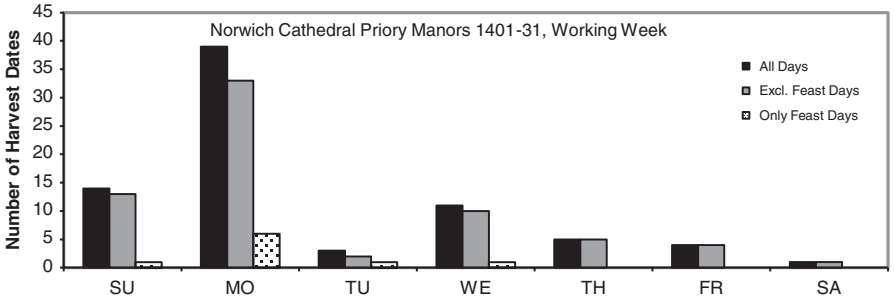


**Fig. 3.11** Norwich Cathedral Priory manors 1401–1431: harvest dates and weekdays. As Fig. 3.8 but for the period 1401–1431

20% Wednesdays. Considering all harvest dates c. three quarters fell to a Sunday. The mid-week high is formed on Wednesday by feast days and non-feast days.

Thus the data from St Benet's of Hulme and St Giles's Hospital mirror the tendency of the Norwich Cathedral Priory harvest dates to start harvesting at the beginning of the week, especially on Sunday, as well as the existence of a smaller mid- or end-week high of harvest dates.

### *3.5.3 The Harvest Date on Selected Manors of Norwich Cathedral Priory*

The individual manors do not diverge significantly from the overall Norwich Cathedral Priory harvest date-setting. Until c.1390 the percentage of feast days among the harvest dates is relatively high, ranging from 36% (North Elmham) to 68% (Monks' Grange). The average lies around 50%. After 1390 the share of feast days drops sharply to range from 0% (Taverham) to 25% (Plumstead) with an average of 12.2%.

In relation to the weekday distribution of the harvest date, most manors comply to the established picture until c.1390.[47] There was a strong preference for starting the harvest on Sunday, which was then followed by a decline from Monday onwards until Saturday, when almost no harvests began. Mid- or end week highs, developed to varying extents, interrupted this successive downward trend. Variation occurred in the steepness of the decline from Sunday onwards. The drop is very abrupt in North Elmham[48] and comparatively smooth in Eaton. Thornham is the only manor that preferred Mondays over Sundays. Another point of variability is the intensity of

[47] Eaton, Gnatingdon, Hindringham, Martham, North Elmham, Plumstead, Sedgeford and Taverham. These are almost all the places included in the analysis of individual manors.

[48] Between 1256 and 1390, 60% of all harvests began on a Sunday at North Elmham. This is due to the feast day data holding the comparatively low share of 36%. Since feast days often cover the normal week days Monday to Saturday, those are underrepresented here. A small mid-week high is situated on Thursday, formed as usually by non-feast day data.

the mid- or end-week high. In Martham the mid-week high was more pronounced than on other manors, whereas in Hindolveston there appears to have been almost no mid-week high. Depending on the individual manor mid- or end-week highs could focus on Tuesday and Wednesday, Wednesday alone, and also Thursday and Friday. In most cases the feast day data are distributed over the week days Monday to Saturday with a bias towards Monday and Tuesday. Non-feast day data are concentrated on Sunday; the mid-week high, too, was often constituted by non-feast days (Fig. 3.12).

The manor of Monks' Grange was the epitome of the rules for the harvest date-setting. From the most popular Sunday the data steadily drop down to a low on Wednesday and Thursday, to rise to an unusually well developed end-week high on Friday and Saturday (Fig. 3.13). The distribution of feast days and non-feast days is very rigid. On the one hand, virtually all the harvest dates coinciding with a feast day (68% of all the data) fell on a day between Monday and Saturday. On the other hand, all the harvests starting on a non-feast day, fell on a Sunday. Although most manors show similar tendencies (except for the mid-week high), Monks' Grange is the only place with such a clear-cut distinction between feast days and non-feast

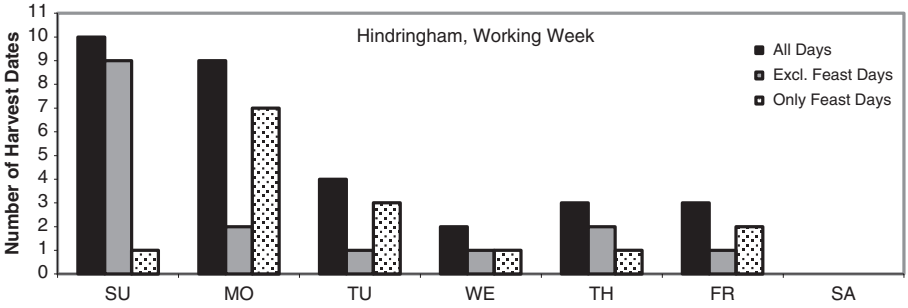


**Fig. 3.12** Hindringham 1256–1390: harvest dates and weekdays. As Fig. 3.8 but for Hindringham. Hindringham has been chosen as a typical example

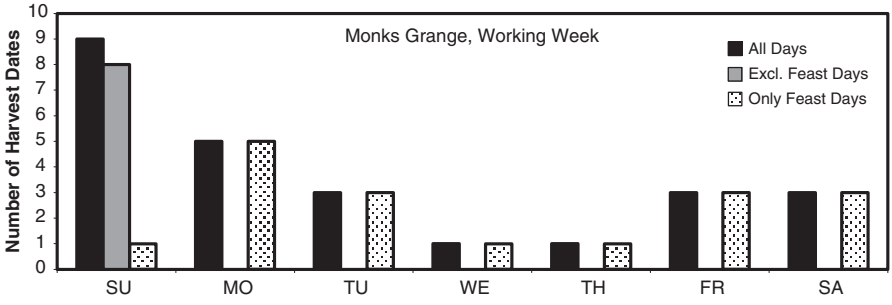


**Fig. 3.13** Monks' Grange 1256–1335: harvest dates and weekdays. As Fig. 3.8 but for Monks' Grange. No data are available after 1335

days. The feast days were almost never Sundays, the non-feast days were always Sundays. It is also the only manor where beginning a harvest on Saturday, as long as it was a feast day, was not avoided. This distribution of harvest dates is probably connected to the fact that Monks' Grange was a manor without tenants. The harvest was performed by the *famuli* and hired labourers or tenants from other manors. Although hired labour was easily available so close to the city of Norwich, more organisation was needed for the mobilisation of this work force than for merely local hired labour and a clear and memorable date, like a Sunday or a feast day, would have to be communicated to ensure a timely supply of hands.

As was shown earlier in this chapter, the pattern in the week day distribution shifts after 1390. The trends of the following period are also clearly visible in the data of the individual manors. Now a small percentage of harvest dates, if any at all, coincided with a feast day. Usually Monday and to a considerably lesser extent also Sunday, were the most popular harvest days. Mid- or end week highs usually existed.

Unsurprisingly the individual manors of Norwich Cathedral Priory by and large reflect the general tendencies of all the priory's estates in respect to harvest date and ecclesiastical festivals or weekdays. Most likely the variations from manor to manor in choosing which day to start the grain harvest reflect differing local customs and work organisation, although Sunday, and after 1390 Monday, were almost always the most popular days for the beginning of the harvest. The mid-week high located between Tuesday and Thursday and constituted by non-feast days could be due to the distribution of the week-work or *opera* days. So harvests that could not wait to the following Sunday respectively Monday might be set to a feast day, if available, or to a normal weekday, when many *opera* were due. These days would have differed from manor to manor. This view is supported by the evidence from Monks' Grange, where neither a mid-week high consisting of non-feast days nor a resident customary tenancy to perform *opera* existed. The data of this place also seem to indicate that the more organisation was needed to engage harvest workers – in this case, because there were no customary tenants resident, in other cases, because larger manors also had to manage larger groups of customary tenants – the more prominent and clear dates, such as Sundays and feast days, would be used. The smaller the manor, the more flexible the harvest date-setting could be.

### *3.5.4 Harvest Date and Calendar*

In late medieval northern East Anglia the setting of the grain harvest date within the short phenological time window of reap-ripe-state was dominated by the preference for starting the harvest early in the week, on Sunday or Monday, and by the preference for beginning to cut the grain on an important saints' day or ecclesiastical festival, such as SJ, SPC, SL and AM. Commencing cutting grain on the last days of the week, in particular on Saturday, was largely avoided on the manors of Norwich Cathedral Priory, St Benet's of Hulme and St Giles's Hospital. Mid-week highs

show alternative days favoured for the start of the grain harvest. The trend of starting to harvest early in the week, though to some extent varying in its strength over the period, persists basically unbroken over the whole period 1256–1431. Tradition also favoured starting the harvest on an ecclesiastical feast day. The earlier in the study period, the more the harvest dates gravitate to these feast days. Probably already after the mid-1330s, but at the latest after 1350 their predominance is broken and after 1390 this pattern disappears altogether.

The preference for feast days and Sundays as days to start the grain harvest conflicts with the general nature of those days as holidays. Work was theoretically forbidden by canon law on such days, however, in reality adherence to that rule was lax. Minor holidays, contrary to Sundays and major feast days, were widely ignored on the English manors. The Norfolk data demonstrate that due to the importance of the grain harvest, permission was granted for harvesting even on Sundays and major holidays such as AM. For the lord of the manor this would prove quite convenient, since both tenants working on the lord's fields as customary labour as well as villagers working as hired labour were readily available at such a day, because they could not perform any major work for themselves. First the village community would assemble in church for rendering service to the Lord, then they would gather in the fields to do so for the lord of the manor.[49] The steady decrease over time of the percentage of harvests starting on a holiday – either a feast day or a Sunday – could be indicative of a rise of living standards and an improvement in working conditions of the common people in the Late Middle Ages. The watershed moment on the estate of Norwich Cathedral Priory, an ecclesiastical landlord, would not be the Great Pestilence in the mid-fourteenth century, but rather the Peasants' Revolt 1381 which marked the end of the time when conservative landlords could resist socio-economic change such as a reduction in customary labour dues. As workers were less and less willing to perform underpaid work, they might also have been less and less willing to work for the landlord on holidays.

The affinity of the harvest date to festivals and Sundays during most of the study period might be explained at least partially by the different use of customary and hired labour. The harvest date in the manorial accounts of Norwich Cathedral Priory primarily refers to the work of the *famuli* and the customary tenants. The days worked by hired labour are rarely detailed. Theoretically the performance of customary labour services was subject to mutual agreements between lord and tenants which were made a few days in advance. Such limitations were not in place for hired labour which was to some extent more flexible and could be called upon *ad hoc*. This is supported by the very few accounts of Norwich Cathedral Priory that state the day when hired labour began to harvest. In Eaton for 1304–1305 the harvest date for the *famuli* and customary tenants is 29 July 1305, but a small list is attached to the main account reporting that the hired labour came in on 26 July 1305.[50] The Bawburgh accounts for 1304–1305 and 1305–1306[51] give both SPC as

[49] Bennett, English manor, 115–118.

[50] NRO, DCN 60/08/11A.

[51] NRO, DCN 61/19 for 1304–1305; the account of 1305–1306 is in the account for Eaton, NRO, DCN 60/08/12.

the general start of the grain harvest, but then specify that the hired people were working a few days before. In the Hunstanton accounts the period of harvest work for customary and hired labour is often given. Here the hired labourers took on work either on the same day as the *famuli,* or a few days later, though hired labour still tended to start on a feast day.[52] The Bawburgh case in particular throws light on the many harvests until c.1300 that started on SPC – sometimes hired labour may have been employed a few days before. Customary labour for harvesting was perhaps easier to enforce, when the harvest season had officially started with SPC. However, it remains unclear if the events at Eaton, Bawburgh and Hunstanton are a glimpse of a more widespread practice, or are merely limited to those places during certain years.[53]

The system of 'stepping stones' of feast days and days early in the week was somewhat less refined until the end of the thirteenth century, when dates were fixed according to rougher scales, as the strong predominance of Sunday and SPC indicates. Several reasons might be responsible for this: there are still many gap years in this period, but in years with surviving data, the number of harvest dates is often very high (Fig. 3.5). The likelihood of reporting identical harvest dates in the accounts of such a year is thus raised, and data accumulate on these days. Probably this does not explain the whole extent of the fixation on Sundays and SPC in this period. More significant appears to be the role of custom. SPC as the official start of the harvest season in the Middle Ages led to a pronounced effort to actually begin harvesting on that day. The data during 1256–1300 in general indicate relatively early harvests, of which a substantial part already started in July before the official start of the harvest season. For making reality comply with the ideal some other early harvests might have been declared to have started with SPC. In the 1290s the financial situation of English landlords deteriorated and accounting procedures improved, hence the detail of the information supplied by the reeve or bailiff in the accounting process increased.

The fine grid of feast days and the days at the beginning of the week would also lose some of its precision in years when SJ, SPC, SL and AM actually coincided with Sunday or Monday. In such years the attraction of the aforementioned feast days would be increased and the normal push of up to two or three days could have been raised by another one to two days. This mechanism aided the general uniformity of the harvest dates on the manors of Norwich Cathedral Priory in 1288, 1295 and 1305. A similar feature could also apply to 1294, 1316, 1339, 1372 and 1389, although data density in these years is too low for allowing far-reaching conclusions. The clear cases of an increased effort to start harvesting on SJ, SPV, or AM are found in the years until c.1300, when the attraction of feast days was most per-

[52] In the first three accounts 1331–1333, NRO, LEST/BG 2, 4–5, both groups started on the same date, but in NRO, LEST/BG 6, 9, 11–13 the different kinds of work are listed separately and differ either by zero, two, three, six or 14 days, though the last appears to be excessive and is probably a simple writing error.

[53] The year 1305 was one of the rare cases when SPC fell on a Sunday. This increased the attraction of SPC as a harvest date. The summer 1305 and the growing season 1306 were also very warm, so normal arrangements might have been overtaken by the need for an early harvest.

ceptible. In some years during the fourteenth century the evidence is inconclusive, and towards the end of the study period no cases emerge any more at all.

Climate exerts the overarching control on the harvest date by setting the phenological time window in which harvesting is possible. Traditionally 1 August, SPC, was seen as the beginning of the harvest season in medieval England. It can therefore be assumed that this day would have corresponded closely with the average development of the reap-ripe-state in the grain in wide areas of England during the High Middle Ages; a notion that is supported by the data from Norfolk in the second half of the thirteenth and in the early years of the fourteenth century. Custom and social influences and the adjustment to the ecclesiastical calendar actually position the harvest date within the adequate pheno-state of the grain. The ecclesiastical calendar in combination with the seven-day week allowed for a generally fine adjustment of the harvest date to the phenological state of the corn. The pushing of the harvest onset to a preferred day did generally not exceed two to three days and was often achieved by waiting. If the short time window, when medieval man could bring in the harvest without much loss, drew to a close, custom and convenience in date setting would be overcome, as is demonstrated by the representation of all week days and all dates between 19 July and 20 August in the data.