11 The 'Flemish Husbandry' at the edge: the farming system on small holdings in the middle of the 19th century

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I. The 'Flemish Husbandry' at the edge

This chapter focuses on some basic features of the Flemish farming system in the middle of the 19th century. At that time, the structures of the Flemish agriculture, typical for the vast sandy area of Flanders, were bursting under the weight of their own contradictions. For centuries, the 'Flemish husbandry' had been based on (1) an extreme and ever-increasing splitting up of holdings and (2) a family-oriented survival economy combining high crop yields with an extremely high input of labour (Thoen 1988: 1997). In the third quarter of the 19th century, this farming system was confronted with its own limits. This was the result of the combination of an extreme fragmentation of agricultural area, a deterioration of property relations and the growing pressure on family based income structures (Vanhaute 1993).

The overwhelming number of Lilliputian holdings in Flanders cannot hide the inequalities in terms of size of farms and differences in the ways they were exploited. In this chapter, we will examine whether there were substantial differences in the nature of the cultivated crops and in the composition of the livestock between small and larger holdings. Starting from the hypothesis that the survival structures differ according the size of the holdings, we hope to reveal some fundamental mechanisms of the 'Flemish husbandry'. This question can only be answered by a micro-analysis starting at the individual level. We focus on two villages, situated in different agricultural regions.

II. A micro-analysis

Agricultural censuses are the sources on which this chapter is based. In Belgium, these censuses were collected on a regular basis from the late 18th century onwards (and especially since 1846). They are mainly studied on a macro-level (see for example the studies of Kint (1989) Goossens (1993) and Blomme (1992)). Nevertheless, for an in-depth analysis of production methods and production attitudes, it is necessary to take micro-economic elements concerning individual holdings into consideration. Data of this kind are collected in the preparatory documents of the agricultural censuses.[1] Unfortunately, most of this detailed documentation has been lost. Only a few local archives have retained these precious documents (see for example

[1] From 1846 onwards, the results of the periodical statistics from the village level are published, for example in *Agriculture. Recensement général. 15 Octobre 1846.*

Vanhaute, 1992). This paper is the first presentation of some provisional results concerning production methods and 'farming systems' within the individual holdings around the middle of the 19th century. Further research will concentrate on a more integrated analysis of the 'Flemish Husbandry' on the level of the individual farm.

The data used in this exercise are collected from the preparatory documents of two censuses, one of 1846 and one of 1856.[2] The basic questionnaires used in the two censuses differ slightly. The census list for Dessel was compiled in 1856. We counted 371 households, of which 363 disposed of at least one plot of land. The census for Meigem dates from 1846. This list contains information on 212 farms (see Table 11.1).

Table 11.1 Households and farms in Dessel and Meigem, c.1850

	Dessel, 1856	Meigem, 1846
inhabitants	1,782	1,274
households	371	241
number of farms	359	212
(% of households)	(97%)	(88%)
surface of the village	2,763 ha	737 ha
inhabitants per hectare	0.64	1.72

Of great importance is the fact that these censuses inform us about all households, even if they did not cultivate any plot of land. In this way, we are able to reconstruct a complete picture of the agricultural activity on a communal and on a household basis.

III. Two test cases

The two villages that are studied here are situated in a rather different topographical and 'historical' context (see Figure 11.1). Dessel is situated in the centre of the Kempen (Campine), a vast sandy area east of Antwerp. The natural fertility of the Campine soil is low. The extensive heathland, mostly administered as common lands, was mainly used as a source for sod manuring. Even around 1850, half of the surface of the Campine villages consisted of unreclaimed land. The labour-intensive system of permanent stabling and sod-manuring was the general practice in this region until the end of the 19th century.[3] Until the second half of the 19th century, the population of Dessel combined a 'traditional' agriculture with proto-industrial wool spinning and weaving (Vanhaute, 1992). Because of a long-term crisis in the wool industry which started a few decades before and eventually led to its ruin, in 1850 only 12 per cent of the active population was able to earn a supplementary income weaving woollen cloth.

[2] The summaries of these censuses are published in *Agriculture. Recensement général. 15 Octobre 1846* and *Agriculture. Recensement général. 31 Décembre 1856*.
[3] Stable manuring with sods was still expanding in the 19th century, from 15,000 to more than 30,000 kg of manure per hectare of arable land on average (Vanhaute, 1992).

Figure 11.1 Map situating the studied villages in Belgium

Table 11.2 Farming land in Dessel and Meigem, c.1850 (% of the total acreage)

	Dessel	Meigem
Arable land	22	74
Meadow land	20	16
Woodland	5	7
Heathland	50	0

Source: based on *Statistique territoriale du Royaume de Belgique* (1839). Arable land includes gardens, meadow land includes orchards.

The second test case is Meigem, a small village in the neighbourhood of Ghent. Being part of the sandy plains of Flanders, the natural soil fertility is only slightly different from that in Dessel. Nevertheless, since the late Middle Ages almost all unreclaimed land had disappeared. A higher population pressure was accompanied by an improvement of the soil condition, thanks to a very long tradition of intensive manuring. Stable manuring in combination with the feeding of fodder crops was the rule. Since the Middle Ages, the splitting up of the farms was a very pronounced development (Deprez, 1956). The village was situated in the proto-industrialized area of linen production around Ghent. From the middle of the 18th century onwards, more than half the population was involved in this activity. Half a century later a struc-

tural crisis threatened the rural linen industry, which culminated in the 1840s (Deprez, 1956; Jaspers-Stevens, 1985).

The extreme fragmentation of the holdings, so typical for the Flemish agriculture, and the labour-intensive cultivation methods generated high crop yields. According to the published censuses, yields were higher in Meigem for bread cereals and lower for spring cereals and potatoes.

Table 11.3 Average yields of some crops according to the census of 1846 (litres per hectare)

	Dessel	Meigem
rye	1,700	2,400
oats	3,300	3,000
buckwheat	2,400	2,000
potatoes	24,000	18,000

Meigem was a typical 'Flemish' village which, as a result of a very long evolution which dates back to the Middle Ages, was cultivated in the same intensive way as most of the area in the former county of Flanders. Heathland, woods and even pasture land were scarce. Dessel, in contrast, was a typical village of the Campine region. A large part of the territory of the village – often more than the half – consisted of heathland. This does not imply that this village was not cultivated in an extensive way, as was thought for a long time. Recent studies confirmed that this area, where heathland was used for sod manuring, was cultivated according to a very intensive agricultural farming system (Bastiaens, 1996; Vanhaute, 1992). In both cases, fallow had disappeared out of the crop rotation systems. In combination, catch crops had become very important, as we will see below.

Table 11.4 Aspects of the farming system in Dessel and Meigem, 1846 (%)

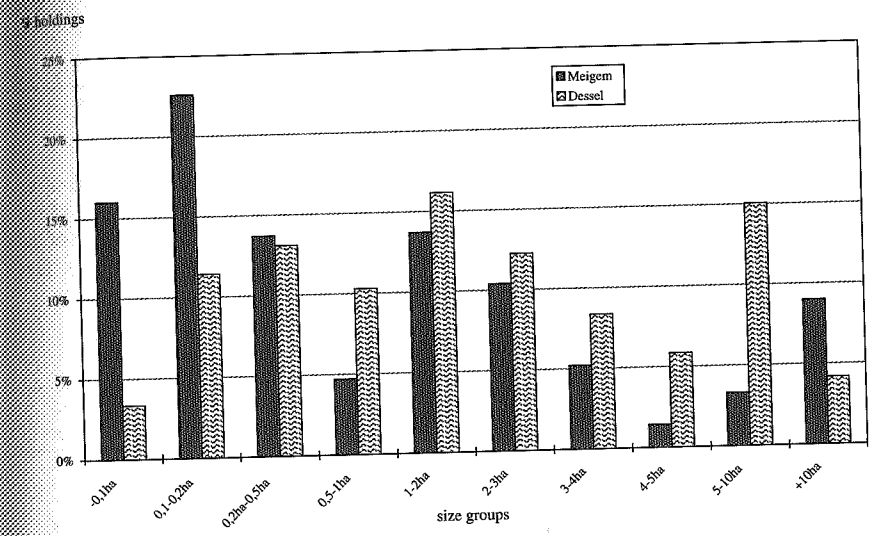
	Dessel	Meigem
farms smaller than 2 ha	52	71
leasehold land	22	84
use of arable land:		
rye	56	40
wheat	–	14
total grains	76	66
potatoes	10	10
industrial crops	3	9
fodder crops (first and second harvest)	52	41

The majority of the households cultivated some plots of land. As a result of the excessive subdivision of the agricultural area, most 'farms' in Meigem were smaller than 2 hectare. Moreover, most of the land was cultivated under leasehold. The fragmentation of the land was less pronounced in Dessel. Until the end of the 19th century, property-holding was the rule in the Campine part of Flanders. The variation in crops in Dessel was also smaller than in Meigem. In the Campine region, wheat, linen and orchards were infrequent. Striking too is the importance of fodder crops, mainly harvested as a second crop: spurry, turnips and carrots in Dessel, turnips, clover and carrots in Meigem. These crops supported the system of permanent stabling.

IV. Large and small holdings

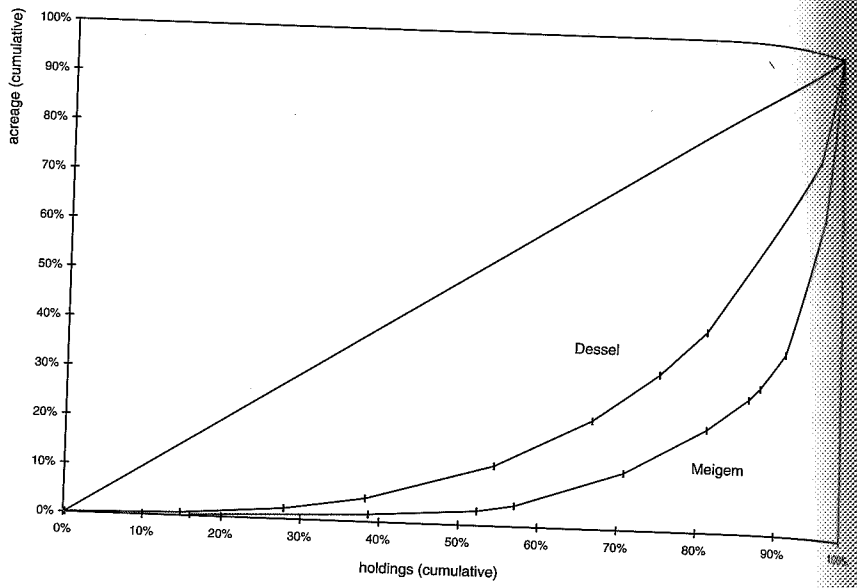
First, let us look at the different size groups, from mini-farms with less than 0.1 hectare to large holdings of 10 hectare and more.

Figure 11.2 Size of the holdings in Meigem and Desssel, mid-19th century



In both villages, the excessive splitting up of farms is striking. This fragmentation is even more explicit in Meigem than in Dessel. In Meigem, more than one of every two households did not dispose of more than half a hectare; in Dessel, the figure was one of every four households. Nineteen and fifteen farms cultivated more than 10 hectares respectively. Meigem counted more large holdings – with seven of them cultivating more than 20 ha – covering almost two-thirds of the acreage of the village area. The Lorentz curve in Figure 11.3 illustrates the more unequal division of farm sizes in Meigem.

Figure 11.3 Lorentz curve of holding sizes in Meigem and Dessel



Assuming that two hectares of farming land is a minimum for the survival of an independent holding, in Dessel 46 per cent and in Meigem only 29 per cent of the holdings correspond to this criterion. This means that in Meigem only a quarter of the households could live exclusively on a farmer's income (44 per cent in Dessel). This confirms the importance of additional incomes.

Table 11.5 Horses per holding in Dessel and Meigem, 1846

	total horses	horses per holding	% holdings with horse	arable land per horse
Meigem				
- 5 hectare	1	0.3	-	-
5–10 hectare	8	1.1	100%	4.6ha
10–20 hectare	31	2.6	100%	4.3ha
+20 hectare	39	5.6	100%	3.7ha
Total farms	79	-	13%	5.8ha
Dessel				
-5 hectare	6	-	-	-
5–10 hectare	27	0.5	50%	7.9 ha
+10 hectare	17	1.1	93%	6.3 ha
Total farms	50	-	13%	12.1 ha

The use of draught animals is a good indicator of the status of independent holdings. In Meigem, only peasants with more than five hectares of farming land worked with their own horses (with one exception). In Dessel, some smaller holdings had a horse, but here too only farms with more than five hectares of farming land kept – as a rule – a horse. In Campine villages, oxen were still used as draught animals. According to the census of 1846, Dessel farmers employed 98 oxen and only 61 horses as draught animals.[4] The necessity of using oxen as draught animals also becomes clear if we compare the number of horses available for cultivation: in Dessel there were 12.2 hectares per horse, while in Meigem there were only 5.8 hectares of land per horse available.[5] In the Meigem area, in contrast, the exclusive use of horses as draught animals had been the rule since at least the 12th century (Thoen, 1993).

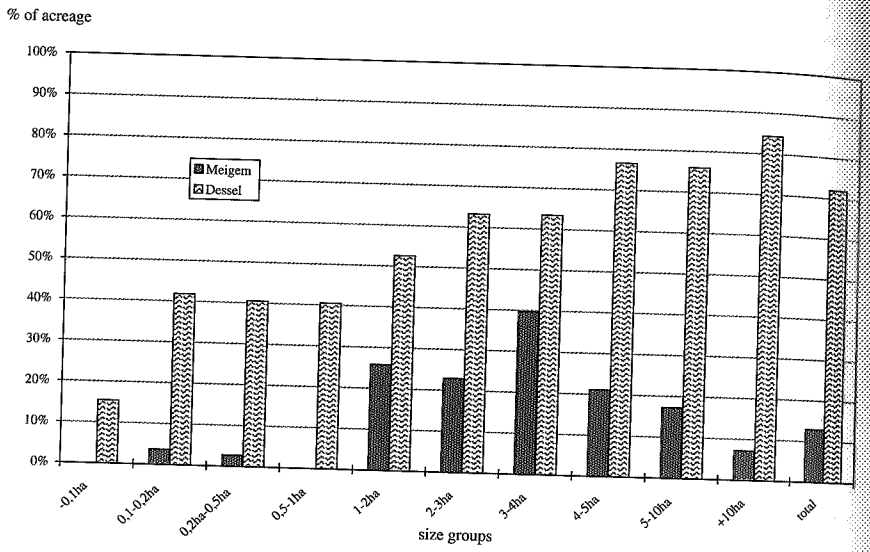
Table 11.3 also shows that in Meigem, almost one-third of the total area of the village was cultivated by peasants not owning horses. It is likely that some smaller peasants borrowed a horse at some point in the year to plough their land. The rather low average of 3.8 hectares cultivated land per horse in Meigem is an additional indication that the horses worked or could work outside the holdings of their owners. The general cultivation of oats on farms of one hectare and more corroborates this presupposition (see below).

[4] In the census of 1856, the number of draught oxen is not mentioned.
[5] Based on the view that one horse could plough about 7 hectares (Thoen, 1998).

V. Property relations

An important structural difference between the two villages are their property relations, or more precisely, the share of property-holding versus lease-holding. In Meigem, a much larger proportion of individuals' holdings consisted partly or even entirely of leases. The increasing importance of leasehold has its roots in the late Middle Ages (Deprez, 1956), but, as with the fragmentation of land, reached its zenith in the first half of the 19th century. As shown in Figure11.4, property holding was almost absent in holdings under 1 ha. Only in the group of middle-sized farms (1–5ha) tenant holding had any importance. In Dessel, the expropriation of the smallholdings was a more recent phenomenon (Vanhaute, 1992).

Figure 11.4 Property holding in Meigem and Dessel (% of the total acreage)



Noteworthy is the almost linear relation between farm size and property holding in Dessel. The fifteen largest holdings consisted of not more than 15 per cent leasehold. This can be the result of a life-cycle strategy, where younger families started with small holdings and a great proportion of leased land.

It seems likely that the structural differences and similarities between the two villages are reflected in the strategy of farm management. This issue is examined in the next section.

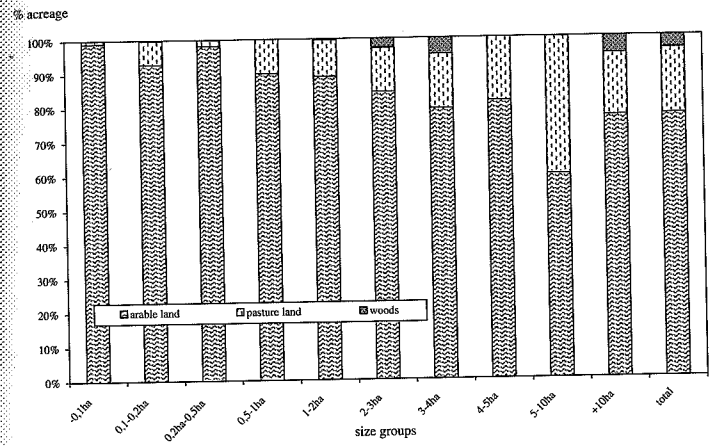
VI. The use of arable land

This section discusses the importance of the sown crops according to the size of the holdings, classifying these from small micro-holdings of less than 1000 m2 to holdings larger than 10 ha.

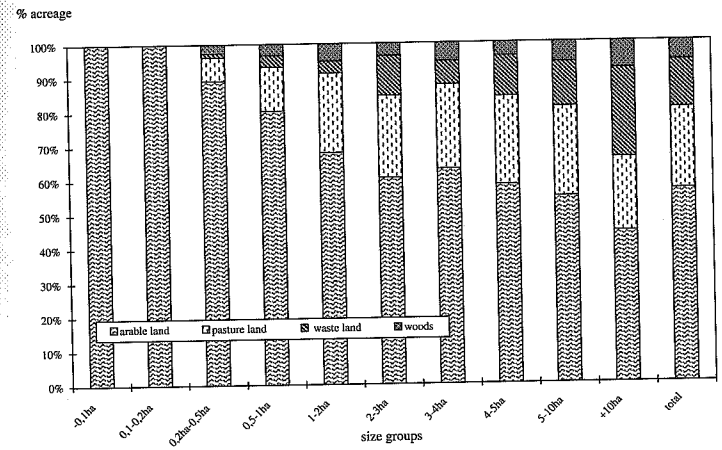
Figure 11.5 shows the importance of the arable land related to land used for other purposes. It confirms what one might have expected: pasture land was of only relative importance on larger farms. In addition to extensive common waste land, private use of heathland and woods was widespread among the larger holdings in Dessel.

Figure 11.5 Land use in Meigem and Dessel

Meigem



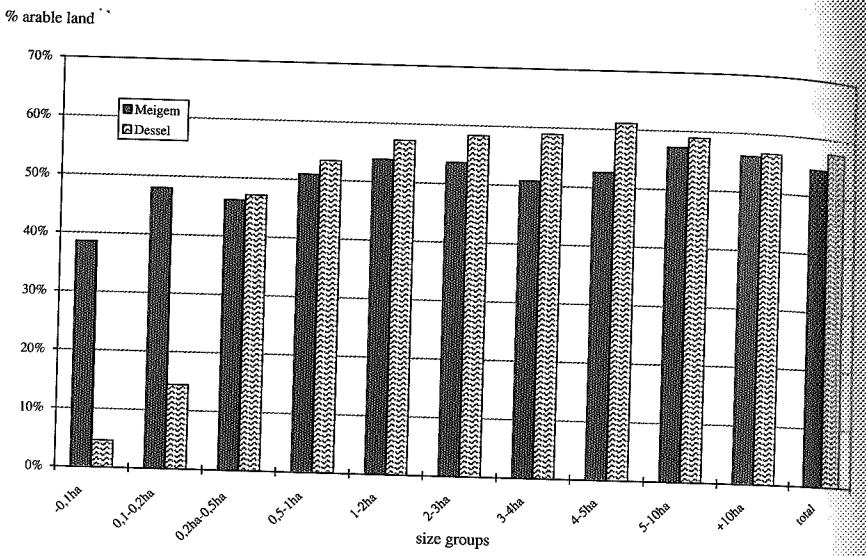
Dessel



VI.1. Cereals and potatoes

In Appendix 1 to this chapter, we bring together the data concerning cereals used for human consumption along with the amount of potatoes planted. The table combines two data: the percentage of holdings within each group that did cultivate the crop, and the percentage of total arable land taken by each crop (average for the whole group). Figures 11.6–11.9 summarize the information.

Figure 11.6 Importance of the bread grains in Meigem and Dessel



In the two villages, rye and potatoes were the most important cultivated crops, both produced in the largest part for self-consumption. However, the variety of crops cultivated in Meigem is greater than in Dessel. In Meigem, even many very small holdings cultivated wheat. Above 4 hectares, all holdings had a plot of wheat land. In Dessel, though, this crop was cultivated only on a very limited scale.

Figure 11.6 shows the importance of bread cereals (wheat, rye, maslin) for nearly all farms, except the smallest ones in Dessel. Here, most of the area was used for potatoes. It is nevertheless remarkable that in Meigem even these microholdings, not larger than a big yard (1000m2), often sowed part of their land with rye and sometimes even with the more risky wheat. From 1 hectare upwards the differences were small. There was no real tendency towards specialization in the larger groups.

Figure 11.7 Importance of oats in Meigem and Dessel

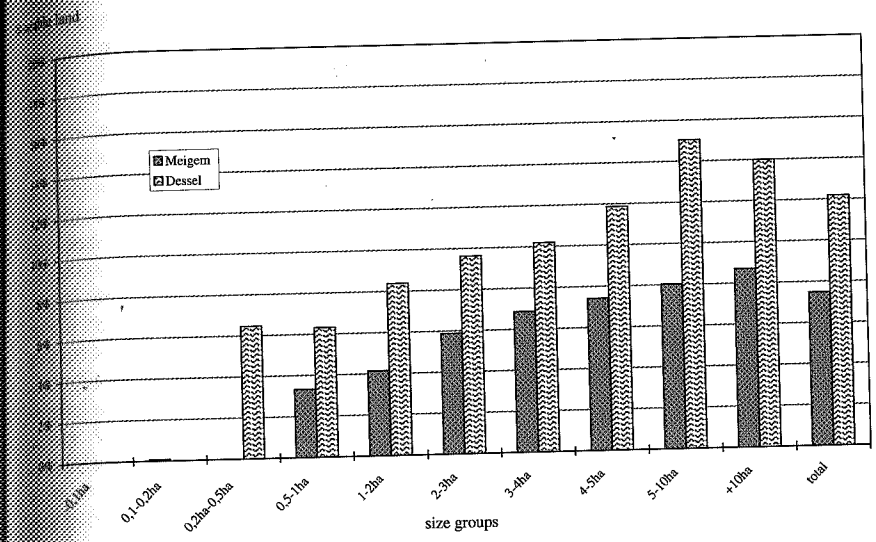
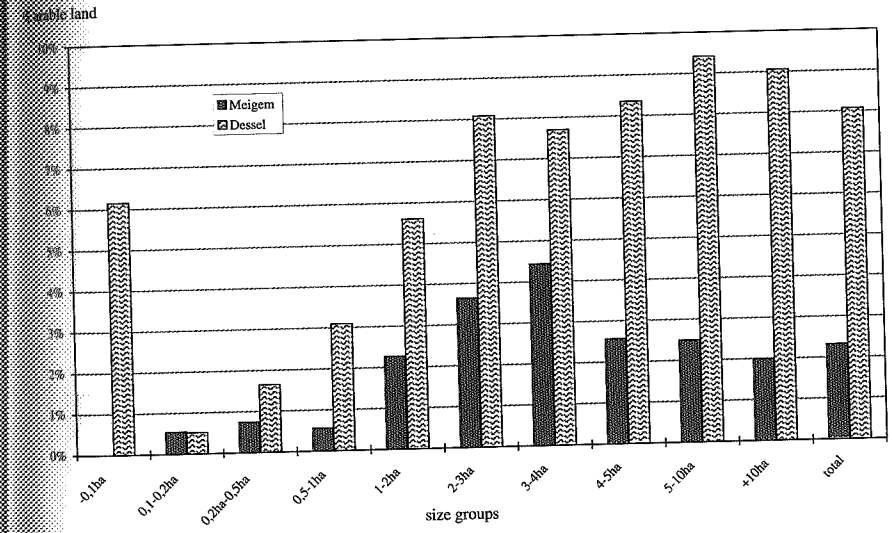


Figure 11.8 Importance of buckwheat in Meigem and Dessel

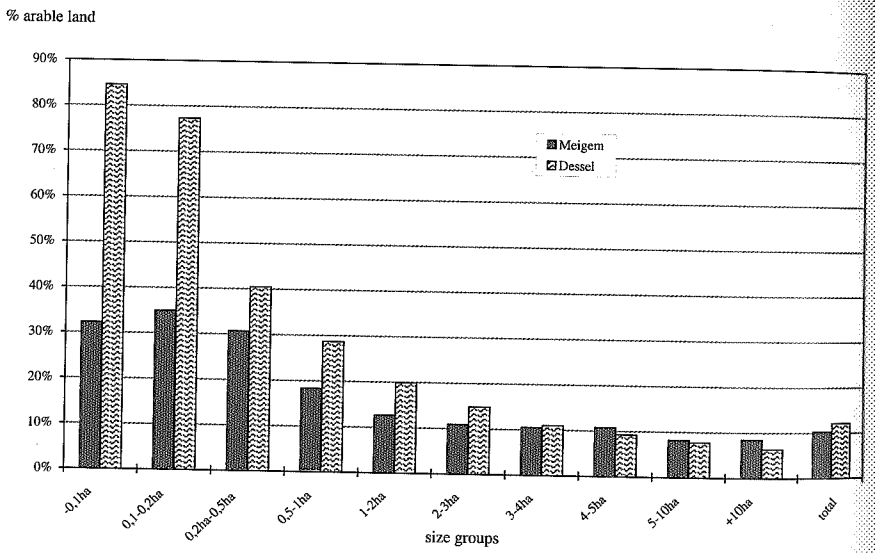


In an area such as Flanders, characterized by a great variation of crop rotations, spring crops played an important role. Barley was only marginally important in all size groups. The share of oats, legumes and buckwheat on the contrary, is gradually increasing according to the rise of the cultivated area (except buckwheat in Meigem, which is losing importance again in the largest groups).

The data show that barley, oats, legumes and buckwheat were cultivated only on a very limited scale on the small holdings without cattle (less than one-half a hectare), which indicates that these crops were as a rule not used for human consumption. It is nevertheless remarkable that oats were cultivated by many households with less than 5 hectares of land. This can, as we mentioned, indicate that those holdings between one-half and 5 hectares of land which did not possess a horse were cultivating this crop to feed borrowed horses during part of the year. In Dessel, the importance of oat lands was even bigger than in Meigem, although the Campine village ploughed large parts of its land with oxen. The fact that both oats and (even more clearly) buckwheat were more important in Dessel than in Meigem is the result of the poorer soils and higher yields in this part of Flanders (see Table 11.2).

In spite of those differences, it is clear that in all holdings, large or small, bread cereals were much more important than spring cereals, although those grains grow in importance among the richer groups of farmers. This is related to the declining (relative) importance of potatoes in the bigger farms.

Figure 11.9 Importance of potatoes in Meigem and Dessel



The cultivation of potatoes had become a central crop in Flemish agriculture from the last decades of the 18th century onwards (Vandenbroeke, 1997). In both mid-nineteenth century Dessel and Meigem, almost all the households were cultivating this tuberous plant. There is nevertheless a remarkable difference in the weight of potato culture relating to the size of the holdings. Smallholders were real potato growers. In Dessel this is most striking: on micro-holdings (less than 0.1 hectare) almost 85 per cent of the land was cultivated with potatoes. Between one-half and 1 hectare, this ratio declines to 28 per cent, and in the farms over 4 hectares, to less than 10 per cent. In Meigem, the smallholders cultivated proportionally more bread cereals. Even then, one-third of the cultivated area of the microholdings of less than 0.2 hectare was used for potato crops. An important number of Meigem smallholdings cultivated only two crops: rye (or wheat) and potatoes.

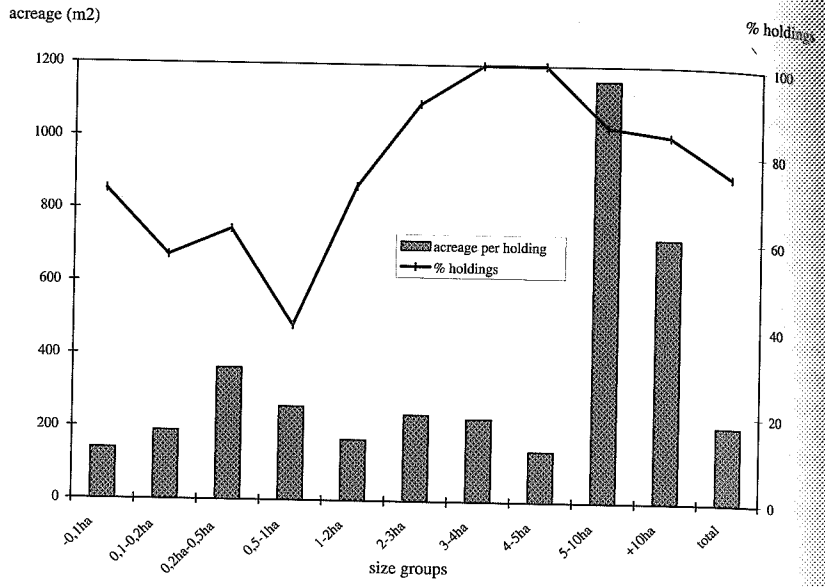
It is clear that, although the yields of potatoes were much higher than those of bread cereals, the higher labour costs did not counterbalance this yield advantage. Self-consumption was the main reason for the cultivation of potatoes. Nevertheless, on the larger farms, potato growing was not limited to its minimum acreage for self sufficiency. We can assume that a part of the potato crop was brought to market. This was certainly the case for the most extensive farms in Meigem.

VI.2. Vegetable gardens and fruit farming

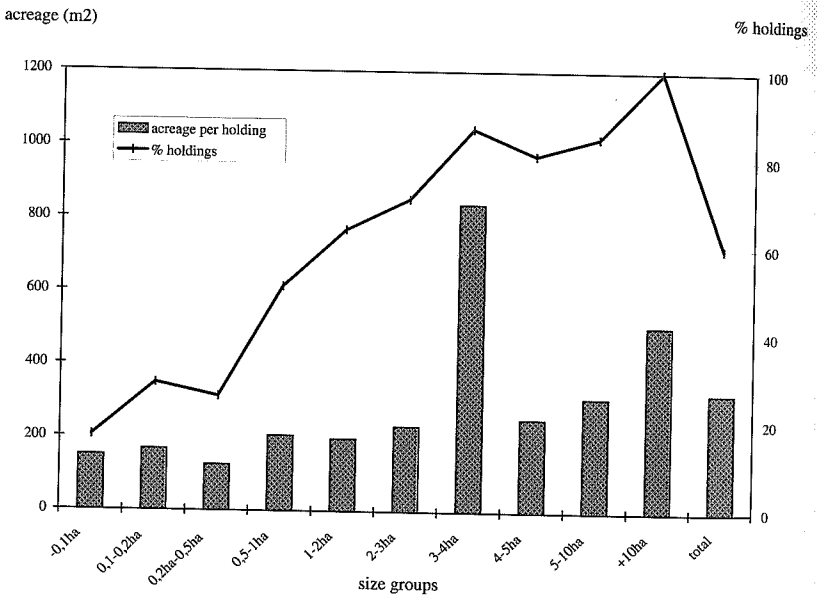
Flemish agriculture has sometimes been characterized as horticulture instead of agriculture (Derville, 1996). There are certainly arguments in support of this statement which highlight the great importance of labour input in the farming systems. What was the share of real vegetable and fruit production in the farming system? Figure 11.10 shows the data for our two villages. Unfortunately, the census of 1856 provides no information about orchards.

Figure 11.10 Vegetable gardens in Meigem and Dessel

Meigem



Dessel

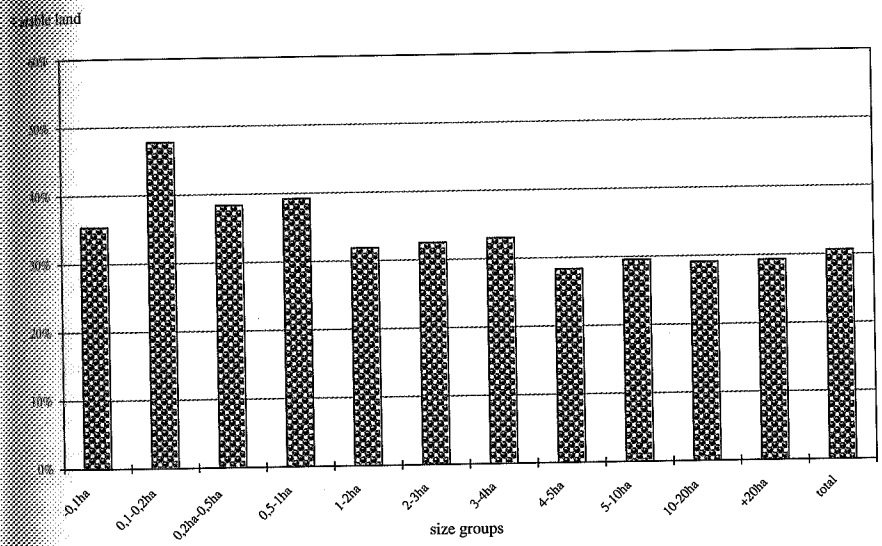


It is surprising that not all smallholdings disposed of a vegetable garden. In Meigem as well as in Dessel, only holdings larger than 1 hectare generally kept a vegetable garden. Most of the micro-holders preferred to cultivate their plot(s) of land with other products. This leads one to suppose that the diet of the poorest people was far less rich than that of people with larger holdings; the poor had to go to the market to buy most of their vegetables. In Meigem, it is striking that the size of the yards grew with the surface of the holdings. In the same village, orchards formed an (often underestimated) part of the self-sufficient economic system. Some fruit was probably brought to the local market. Orchards were omnipresent in Meigem on holdings larger than 2 hectares. Their size was clearly going up with the size of the holding. However, even the smallholders often kept some fruit trees which could enrich the diet. In Dessel, vegetable gardens were found regularly only in holdings larger than half a hectare. Here, production for the market was probably not so common. The same was true for fruit production, as separate orchards were not mentioned in the census of this village.

VI.3. Catch crops

Although we know that catch crops (after crops) were also important in Dessel,[6] we can analyse the information on this practice only for Meigem (see Figure 11.11).

Figure 11.11 Importance of catch crops in Meigem



[6] According to the general survey of 1846, they covered more than 40 per cent of the arable land

In Meigem, turnips in particular were cultivated as an after crop. Clover and carrots (probably parsnips) and, exceptionally, potatoes also turned up as catch crops. Almost all holdings used a part of their land for a second harvest. The differences between larger estates and small holdings are small with, surprisingly, the highest shares in the micro-holdings. The fact that the micro-holdings without cattle also cultivated turnips makes it likely that this plant still played a large part in human consumption (as the basis of the daily potage-soup). Differentiation in consumption crops was the rule also in mini-farms.

VII. Pasture land, cattle breeding and fodder crops

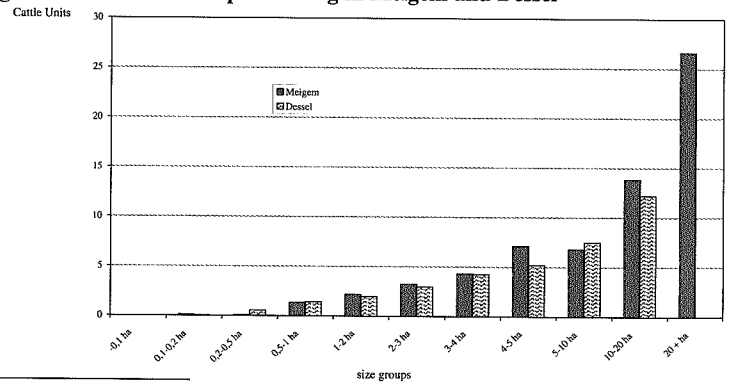
VII.1. Pasture land

Although the global share of pasture land was only slightly different between the two villages (19 per cent in Meigem, 24 per cent in Dessel), the differences between the size groups are more important (see Figure 11.5). In both cases the rule was, the richer the peasant, the more important the pasture land. In general, the Dessel farmers could dispose of more grassland than their Meigem colleagues. Moreover, in the Campine village, smallholdings as well as more important farms used a considerable amount of private heathland, and even of woodland (an exception was made for the smallest holdings of below 0.2 ha). It should be added that in Dessel, extensive common fields were still available to the farmers. They were used especially for sod-manuring (not shown in Figure 11.5). The possibilities for cattle breeding were much more limited in Meigem than in Dessel, especially for the small peasants.

VII.2. Livestock

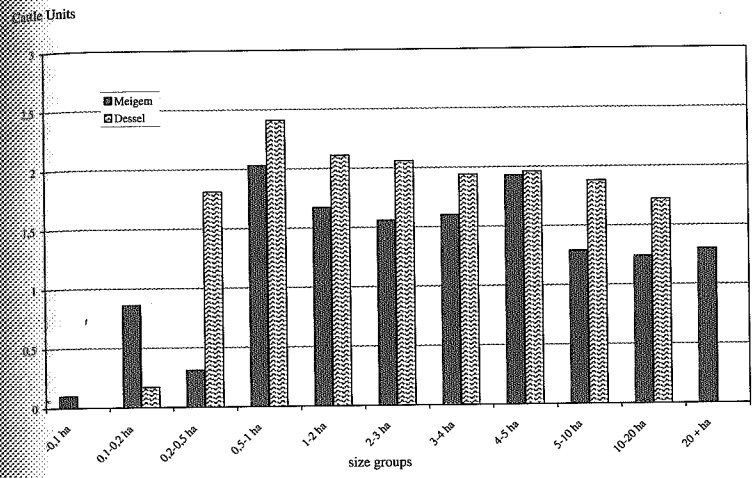
A good measure of the balance between arable farming and cattle breeding is the calculation of so-called cattle units.[6] Figures 11.12 and 11.13 summarize the data.

Figure 11.12 Cattle units per holding in Meigem and Dessel



[6] We uesd the key 20 sheep = 8 pigs = 2 horses = 1 cow (Vanhaute, 1992), based on data on manure production.

Figure 11.13 Cattle units per ha arable land in Meigem and Dessel



Horned cattle was the most important category of livestock. However, the herds were small. In Meigem as well as in Dessel, almost all the holdings larger than one-half a hectare raised cows. Small microholdings often had goats. In general, the number of horned cattle went up with the rate of hectares of farming land (in Meigem somewhat more than in Dessel). From one hectare onwards, the farmers had on average 2 cows; from four hectares, 5–7 cows, and from 10 hectares, 10–12 cows. The seven largest estates in Meigem had an average of more than 22 cows. Cattle breeding was especially directed at the production of milk and manure. In Dessel, oxen were used as draught animals.

Sheep breeding was insignificant in Meigem, where only one (large) farm had an important flock of sheep. In Dessel, holdings of four hectares and more regularly raised some sheep, although the flocks were small. These flocks could certainly profit from the extensive common fields in this village.

Pig breeding was still unimportant in Dessel. The micro holdings of less than a fifth of a hectare abstained from pig breeding. Larger holdings of two hectares and more as a rule fattened one animal for personal consumption. In Meigem, pig breeding was slightly more significant. As in Dessel, most of the micro holdings of less than half a hectare did not have any pigs. Holdings larger than three hectares usually had more than two pigs, those with an acreage of more than ten hectares raised more than six pigs. In these holdings, piglets also became a frequent feature which seems to indicate that the farmers were not only fattening but also breeding pigs.

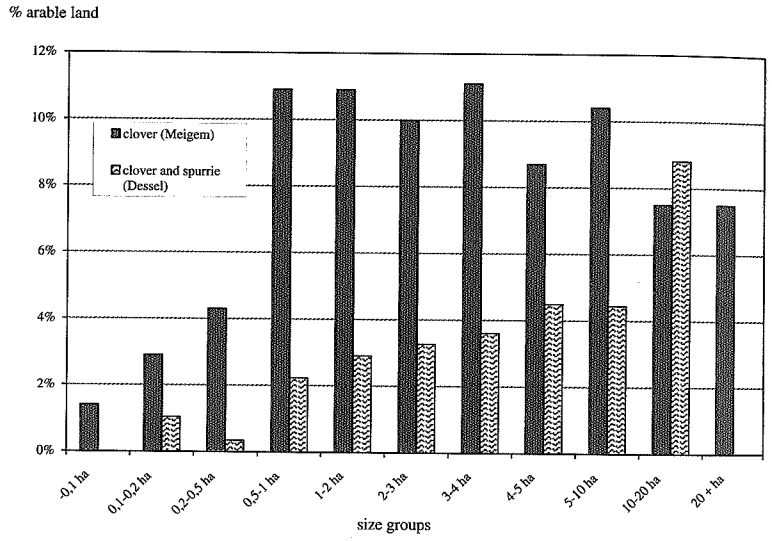
We now turn back to the figures for cattle units. It is clear that from half a hectare upwards, cattle manure became useful. The holdings between one-half and five hectares had the best animal ratio (almost 2 units per ha). It is probably no coinci-

dence that, at least in Meigem, we find the highest production of very exhausting industrial crops on these holdings. On the larger holdings, the animal ratio went slowly down, which may be related to the fact that these holdings were obliged to produce more (cheaper) spring cereals in comparison to bread cereals. It is also clear that the labour-intensive sod-manuring system of Dessel and the larger surface of pasture land produced a larger livestock (except in the very small micro holdings under 0.2 ha: 1.9 cattle units on the average against 1.35 units for Meigem. Cattle and consequently cattle manure was more significant in Dessel than in Meigem. This is related to the system of sod manuring and the growing of fodder crops.

VII.3. Fodder crops

The relative small availability of pasture land, made fodder crops more necessary in Meigem than in Dessel. In the census of 1846, green fodder crops are clearly distinguished, with red clover being the most important. In the 1856 census of Dessel one used the general term 'forage' (soilage), composed out of clover and spurry.

Figure 11.14 Importance of fodder crops in Meigem and Dessel



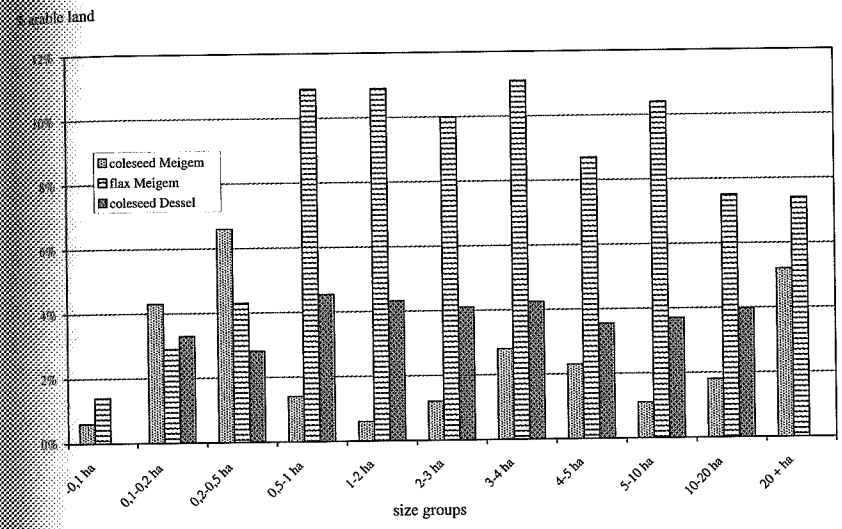
In the environs of Ghent, clover was introduced as a fodder crop in the 17th century (Lindemans, 1952). In Meigem, clover was surprisingly important on the smaller holdings: it covered more than 10 per cent of the arable land on holdings from 0.5 ha upwards. Taking into account that some smallholders raised no cattle (and consequently did not cultivate clover), this average is still an underestimation for the cattle-holding microholdings. The larger holdings were, in terms of percentage of the cultivated area, sowing a little less clover. In Dessel, on the contrary, green fodder

was generally less significant. The larger the holding, the more these kinds of crops were sown (just as with oats and buckwheat).

We cannot underestimate the importance of clover in Meigem (and a large part of Flanders) for livestock and manuring. This crop was to a large extent responsible for the relatively high yields, gained without the labour-intensive and land-intensive sod manuring system used in Dessel. There seems to be much truth in the statement that clover was the most important 'invention' before the mechanization of industry (Bieleman,1996).

VIII. Industrial crops

Figure 11.15 Importance of industrial crops in Meigem and Dessel



As the graph (figure 11.15) shows, industrial crops were much more popular in Meigem than in Dessel. Only coleseed was more important in Dessel, both on small and larger farms. Only a small amount was probably brought to the market. Flax, the raw material to make linen, was very popular all over the large area around Ghent, even in this period of the terminal crisis in the linen industry. All categories of holdings were sowing flax, especially those between 0.5 and 10 ha. Most of the flax was used in the rural cottage industry. Although the larger holdings reduced the percentage of arable land with flax, they still produced surpluses for the market. Rapeseed and tobacco were also cultivated, the latter crop only in a very small amount (probably mostly for personal consumption).

It is known from qualitative sources that there was a link between the cultivation of clover and the acreage of flax, with clover being sown as 'under crop' of flax (Lindemans, 1952). The striking resemblance between the sown acreage of flax and clover seems to prove this statement (Figures 11.14 and 11.15). Of course, clover also helped to restrain the exhaustion of the soil by the very demanding flax crop.

Mid 19th-century arable agriculture combined crops for consumption by the farmers, for feeding the animals and for sale. This general picture can be nuanced by looking at the differences in farm size. The smallest holdings concentrated on potatoes (Dessel) or on bread grains and vegetables (Meigem). In the Ghent village, the extreme fragmentation of land was no obstacle to bring a remarkable variation in the consumption crops. There was even space for fruit and turnips (as a catch crop). The village economy of Dessel, with the dominant place of common rights and internal exchange circuits, compensated partly for the underproduction of basic foodstuffs in the smaller holdings. Oats, buckwheat, barley (Meigem) and clover and spurry (Dessel) were mainly harvested as fodder crops. Meigem participated in a commercial market production of potatoes, vegetables, fruit and flax. In Dessel no such systematic external market system existed yet.

IX Provisioned conclusions

This study focuses on the agricultural techniques in Flanders in our firm believe that a comparison of the farming strategies between small holdings and larger estates could generate a more profound insight in the features of the Flemish rural economy. As a test case we selected two villages, geographically and historically situated in a different context and for which the results of the individual questionnaire per holding for the agricultural census of 1846 (for Meigem) or 1856 (for Dessel) were preserved.

In both villages, we have found the most important features of the Flemish Husbandry. Both large estates and smallholdings had a mixed economic agrosystem. Specialization was limited and the variety of crop cultivation was significant. This variety was more important in Meigem than in Dessel. Cattle breeding in the heathland village Dessel as well as in the 'Flemish' village of Meigem was practised in conjunction with arable farming. This was (except for the very small 'micro' holdings) true for all holdings, large and small. In Dessel, 80 per cent of the holdings had at least one cow; in Meigem, about 50 per cent did so. This mixed economy indicates a 'safety-first attitude' rather than an attitude to maximize profits. This does not mean that commercialization was absent; if economically possible, the peasants brought surpluses to the market.

An analysis which compares the management of larger farms with smaller holdings permits us to look deeper into the farming strategies of the Flemish peasants. There are arguments for considering the farms between half a hectare and five hectares as 'typical Flemish' holdings. The mixed farming system was here brought to its highest level, as is shown by the high ratios of cattle units per hectare and the cultivation of the greatest variety of crops (including catch crops, industrial crops and fodder crops, in the first place for personal consumption). The maximization of output went hand in hand with a high input of labour, although many of the holdings in this group did not dispose of a draught animal (which were only regularly present on holdings larger than four hectares).

Indeed, cultivation methods were less intensive on the greater holdings. Here we find a greater share of less labour-intensive crops such as spring grains. These farms, at least in Meigem, also had more space to cultivate products for the (local and probably town) market such as vegetables, fruit, potatoes, cattle and diary products and sometimes pigs. Nevertheless, although more restrained, maximization of output and a high labour input were common features of large estates too, as is shown by the high share of catch crops in these holdings. This can be partly explained by the lack of very large farms: even the larger farms in Flanders could mainly – although not completely – be worked by family labour.

Not all the rural population could survive on the basis of the 'typical Flemish' self-sufficient mixed farming holding. In Dessel one-fifth, and in Meigem almost half, of the holdings were too small for self-sufficiency. As a rule, these households had no cow, breaking the direct link between animal manuring and yields. Nevertheless, these holdings practised a special form of intensive 'Flemish' husbandry. It was equally based on the maximization of output, high labour input and a spread of risks.

On these small plots of land, the real Flemish horticulture was taking place. This is especially clear for the micro-holdings of Meigem. Meigem smallholders without cattle cultivated less than half a hectare of land, in large part with the spade. As a rule, these micro-holdings cultivated a maximum of basic foodstuffs, such as potatoes and rye (grown on 80 per cent of the holdings). Although the variety of crops was smaller on these holdings, many of them also grew vegetables (on 60 per cent of the holdings), wheat (on 40 per cent), fruit (40 per cent), coleseed (30 per cent) and even sometimes the very exhausting culture of flax (13 per cent). Almost all enlarged the amount of cultivated land, on average by 50 per cent, with the planting of catch crops, also mostly used for personal consumption (80 per cent with turnips, 12 per cent with carrots). One- third had a goat and 10 per cent even owned a pig. The variety of crops on these smallholdings remains amazing. The extreme fragmentation of land, the increasing pressure of the population, the collapse of the rural linen industry, the ever-growing financial weight of leaseholding: all these elements forced the small farmer to maximize the output of his land. Intensive forms of manuring and cultivation were necessary. The general strategy aimed at survival and focused on (incomplete) self-sufficiency. The peasants also needed money to pay the rents and to buy necessary products on the markets. Moreover, they tried to sell some arable and industrial products on the markets.

This model of 'commercial survival economy' (Thoen, 1994) was less pronounced in Dessel. In general, the incentives to produce for the market were greater in Meigem than in Dessel. In the Campine village, the number of micro-holdings without cattle was less and we see that here the variety of cultivated crops was smaller. Here, we

find many smallholders (less than 0.2 ha) cultivating exclusively potatoes. About half of them combined potatoes with some rye, and only a quarter grew additionally some vegetables, some buckwheat and some coleseed. The better land–pasture ratio, the low share of the production of vegetables and industrial crops, are all signs of a more closed commercial circuit in Dessel. The pressure on the holdings was more restrained by the presence of vast areas of heathland and meadow lands. Common fields were still covering more than half of the village. Moreover, leasehold was less common, especially on the smallholdings, and the leasing prices were lower. This contrasts with the situation in the Ghent area, where for centuries leasehold had accompanied property and tenant holding. Here, money circulation (and commercialization) was incited by the more important position of this leasing system in the context of both the smallholdings and the larger estates. We have some indications that in the Campine villages, the size of the farms was partly linked to the life cycle of the peasants: they started with a small family and a small farm, and aimed to end up with a larger family and a larger farm. In Meigem this life cycle was less clear, probably as a result of the introduction of leaseholding on the very small holdings (probably from the 18th century onward).

This study has revealed some features of the 'Flemish Husbandry' in the middle of the 19th century, at the edge of its possibilities. This kind of agriculture has its roots in the middle ages (Thoen, 1994, 1997) and gradually developed an extreme form of a labour-intensive mixed farming system based on the self-exploitation of household labour. In many areas – as probably was the case in Meigem – the trend towards ever smaller holdings and the negative changes in property rights was confronted with productivity limits. In this light, the famine of 1845–47, rather than being the last 'classical' supply crisis, appears to have resulted from the growing incapacity of the old survival strategies to absorb the new social tensions of the changing society (Jacquemyns, 1928; Vanhaute, 1992). Nevertheless, it still took several decades before the Flemish agriculture transformed into a commercial system of household farms.

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Appendix Cereals and potatoes cultivated in Meigem and Dessel

MEIGEM

	wheat	spelt	maslin	rye	barley	oats	legumes	buck-wheat	potatoes
GROUP 1 (0-999m2)									
percentage of holdings with	15%	0%	0%	38%	3%	0%	0%	0%	44%
percentage of total arable	11.0%	0.0%	0.0%	27.6%	0.6%	0.0%	0.0%	0.0%	32.2%
GROUP2 (1000-1999m2)									
percentage of holdings with	42%	2%	4%	73%	4%	2%	4%	2%	92%
percentage of total arable	16.1%	0.3%	1.4%	30.2%	1.0%	0.1%	0.5%	0.5%	35.0%
GROUP 3 (2000-4999m2)									
percentage of holdings with	48%	0%	10%	83%	3%	0%	7%	7%	97%
percentage of total arable	12.9%	0.0%	3.3%	30.0%	0.1%	0.0%	0.5%	0.7%	30.7%
GROUP4 (5000-9999m2)									
percentage of holdings with	60%	0%	10%	100%	0%	30%	0%	10%	100%
percentage of total arable	7.3%	0.0%	0.0%	43.7%	0.0%	3.3%	0.0%	0.6%	18.3%
GROUP 5 (1-1.99 ha)									
percentage of holdings with	83%	0%	14%	97%	21%	52%	14%	31%	100%
percentage of total arable	13.1%	0.0%	0.7%	40.1%	1.3%	4.1%	0.5%	2.3%	12.7%
GROUP 6 (2-2.99 ha)									
percentage of holdings with	86%	0%	18%	95%	23%	86%	14%	68%	100%
percentage of total arable	17.0%	0.0%	3.4%	33.3%	0.9%	5.9%	0.4%	3.6%	10.9%
GROUP 7 (3-3.99ha)									
percentage of holdings with	82%	0%	0%	100%	9%	82%	27%	73%	100%
percentage of total arable	11.2%	0.0%	0.0%	39.6%	0.2%	6.9%	1.2%	4.4%	10.5%
GROUP 8 (4-4.99 ha)									
percentage of holdings with	100%	0%	0%	100%	33%	100%	0%	67%	100%
percentage of total arable	13.5%	0.0%	0.0%	39.1%	1.3%	7.4%	0.0%	2.6%	10.8%
GROUP 9 (5-9.99 ha)									
percentage of holdings with	100%	0%	14%	100%	29%	100%	29%	86%	100%
percentage of total arable	13.4%	0.0%	0.6%	43.2%	1.2%	8.0%	0.8%	2.5%	8.2%
GROUP 10 (10-19.99 ha)									
percentage of holdings with	100%	8%	0%	100%	67%	100%	67%	75%	100%
percentage of total arable	17.6%	0.2%	0.0%	38.4%	2.2%	8.3%	1.1%	2.4%	8.1%
GROUP 11 (+20 ha)									
percentage of holdings with	100%	0%	0%	100%	29%	100%	71%	71%	100%
percentage of total arable	10.3%	0.0%	0.0%	44.7%	0.6%	9.2%	1.4%	1.6%	8.9%
TOTAL									
percentage of holdings with	65%	16%	21%	84%	27%	45%	14%	38%	91%
percentage of total arable	13.8%	0.1%	0.5%	40.2%	1.2%	7.5%	1.0%	2.3%	10.3%

II/ DESSEL

	wheat	rye	barley	oats	buckwheat	potatoes
GROUP 1 (0-999m2)						
percentage of holdings with	0%	17%	0%	0%	8%	100%
percentage of total arable	0.0%	4.6%	0.0%	0.0%	6.2%	84.6%
GROUP2 (1000-1999m2)						
percentage of holdings with	5%	39%	0%	0%	2%	100%
percentage of total arable	0.9%	13.5%	0.0%	0.0%	0.5%	77.3%
GROUP 3 (2000-4999m2)						
percentage of holdings with	0%	98%	0%	32%	9%	98%
percentage of total arable	0.0%	47.1%	0.0%	6.5%	1.6%	40.5%
GROUP4 (5000-9999m2)						
percentage of holdings with	0%	95%	0%	59%	32%	100%
percentage of total arable	0.0%	53.4%	0.0%	6.3%	3.1%	28.7%
GROUP 5 (1-1.99 ha)						
percentage of holdings with	2%	98%	2%	81%	59%	100%
percentage of total arable	0.1%	57.1%	0.2%	8.4%	5.6%	19.9%
GROUP 6 (2-2.99 ha)						
percentage of holdings with	0%	98%	2%	95%	86%	100%
percentage of total arable	0.0%	58.3%	0.5%	9.6%	8.1%	14.9%
GROUP 7 (3-3.99ha)						
percentage of holdings with	0%	100%	3%	97%	90%	100%
percentage of total arable	0.0%	58.9%	1.0%	10.2%	7.7%	11.0%
GROUP 8 (4-4.99 ha)						
percentage of holdings with	5%	100%	0%	100%	100%	100%
percentage of total arable	0.3%	60.8%	0.0%	11.9%	8.4%	9.2%
GROUP 9 (5-9.99 ha)						
percentage of holdings with	6%	100%	2%	96%	100%	100%
percentage of total arable	0.1%	58.8%	0.0%	15.0%	9.4%	7.7%
GROUP 10 (+10 ha)						
percentage of holdings with	27%	100%	13%	100%	93%	100%
percentage of total arable	1.6%	55.2%	0.3%	14.0%	9.1%	6.4%
TOTAL						
percentage of holdings with	3%	89%	1%	68%	57%	100%
percentage of total arable	0%	57%	0%	12%	8%	12%

12 A valuation of arable productivity in the central part of the Dutch river area, c.1360–c.1570

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As was noted when discussing the inventory of statistics in Chapter 3, not many published data on land productivity in the Netherlands are available for the period before the 18th century. This goes for all indicators of land productivity, including data on yields of grain per unit sown, the type of measurement on which the present chapter focuses. Long-term series on yields per area sown in the Netherlands are even more rare. However, this does not mean that compiling such long-term series is impossible, as at least some source material is available and research methods have been developed for its use.

In this chapter, we will consider some of these sources from the central part of the Dutch river clay area in order to get a view of developments in terms of yields per area sown, and hopefully also to gain more insight into long-term developments in arable productivity. In doing so, this chapter will focus on the late medieval and early modern period. During this time, the rural economy in the region in question went through some radical changes which very probably affected land productivity.

1. Test regions and sources

The test regions chosen to investigate the developments in yields per area sown are (1) the Land of Culemborg, (2) the Land of Buren and (3) the Mariënweerd area, all situated in the central part of the Dutch river area.

The Land of Culemborg was a small principality of approximately 40 km^2, lying on the left bank of the river Lek some 20 kilometres south of the city of Utrecht. The Land of Buren also was a small principality, covering about 65 km^2, bounded on the west by the Land of Culemborg. Situated directly south of these two principalities was the territory of the Premonstratensian abbey of Mariënweerd, covering about 10 km^2. The region in which these territories were situated consists of light and heavy river clay, with a typical alternation of stream ridges and backlands. Notwithstanding their low-lying situation and the marshiness that made them not particularly suited for agriculture, most of the land had been brought under cultivation by the 11th–12th centuries. By the period around 1300, practically all of this region was in agricultural use.