

Maps, hops and war

by Pia Nilsson

The early seventeenth century Sweden

Sweden was, at this time, a country with vast economic difficulties and a stagnated population growth. The problems were mainly caused by the Thirty Years War, which consumed almost every available human and economic resource.¹ At the same time the increasing creation of manors caused profound changes that affected the traditional agrarian society.² The demand for, and economic importance of, forest resources grew. The war, mining and shipbuilding industries needed wood, charcoal, timber, tar and sodium nitrate. Sweden was an important producer and exporter of tar, iron and other metals.³

The early seventeenth century was apparently a period of change at several levels.⁴ Among the changes was the beginning of individualization and specialization within the agrarian society.⁵ In this paper I will show that although subsistence farming was the prevailing system, specialization and commercial farming was common among a certain kind of farms in rural Sweden during the early seventeenth century. To support my standpoint, I use Sweden's oldest map-collection, the geometrical cadastral maps from the early seventeenth century, and I have chosen to study large scale hop farming as an indicator of commercial farming. My aim is to try to identify who the commercial farmers were; do the farms share common features, or are they situated in certain surroundings? Hop gardens are coherently described on the maps, which makes the crop possible to study and compare to acreage, information in tax registers etc.

Commercial farming

Specialization and commercial farming in Sweden is mainly said to be connected to the agricultural revolution, starting around 1750, with its new kinds of crops, crop rotation, artificial fertilizer etc.⁶ Nevertheless, regional specialization is identified earlier, already during the sixteenth century. Lennart Andersson Palm shows that the farmers in parts of the province Västergötland bred and exported horses and oxen and, in their homes, performed a market-oriented production of fabric and wooden handicrafts.⁷

I will supplement the discussion by showing that also cash crop farming was common before the agricultural revolution, and I will suggest that this possibly was an answer to the difficult and insecure times due to the Thirty Years War. My focus concerns the family-based household-economy farms. With the concept *specialization* I consider a production with the purpose to sell all or most of the produce. I do not mean for example the sellable or exchangeable surplus that may come from a large grain harvest depending on occasional favourable weather conditions. Subsistence farming includes selling and exchanging products between neighbours and neighbouring villages, but this multi-functional economic system must not be confused with specialization.

In the early seventeenth century the escalating tax levels and increasing demand for resources, caused by the expensive war, affected the growth of the non-agrarian sector. The peasants who could produce and sell the demanded forest products mentioned above could pay the

higher duties more easily and without risking pauperization.⁸ Besides this, the Crown strove to support the important and developing mining and iron industries which meant, among other things, facilitating the supply of food, draught animals and other necessities to the miners, in order to enable them to concentrate on working further in rough areas with low or no possibility for agriculture. This required an increasing specialization and a regional division of work.⁹

Hypothesis

The war-economy meant escalating pressure on the farmers, including higher tax levels as well as enlistment of soldiers, and led to profound changes in the economic system.¹⁰ I consider large scale hop farming as one aspect of this system.

I have started from two hypotheses. The first is the presence of division of work. By this I adopt the definition of Carl-Johan Gadd, that the working hours were divided between several activities such as grain growing, crafts, transportation, trade, fishing and charcoal making. Division of work by this definition is the opposite of professional specialization, where only one task is performed, for example, a craft.¹¹ I presuppose that the economy of the agrarian society was pluri-functional, and that the members of the household shared their time between several different activities during shorter or longer periods of the year. My second hypothesis is that large scale hop farming was more common among the smaller farmsteads (in acreage) than among the larger. The reason for this presumption is that the smaller farms needed a broad economic base in order to be able to increase their savings due to the insecure and increasing demands from the Crown, and to buy or barter the necessary quantities of grain and other products.

The pluri-functional farm

The agrarian system among the studied farms was a combination of grain growing and animal husbandry, together with a set of various other

activities. These activities differed according to the geographical preconditions, but could consist of, for example, fishing, nut and birch-bark collecting, and milling. Production for subsistence was practised, and the ordinary farm comprised between 2 and 25 acres with a couple of cows, draught animals and some small livestock (normally sheep or goats, sometimes pigs), and, according to the size of the holding, access to woodlands, fishing water and grazing land outside the enclosed area of the hamlet or farm. The arable land was either cultivated yearly, or divided into a two- or three-field system. In the provinces of Uppland and Östergötland, the two-field system was predominant, while the three-field system was common in Västergötland. The farmsteads in the hamlets practised an open field system. The livestock (cattle, sheep and goats) was to a large extent sent to the woodlands outside the hamlet area to graze for substantial parts of the year. Only the draught animals, lactating cows, and young animals were kept in enclosures near the farmsteads.

The season-bound Swedish agriculture made it possible to work at activities other than farming, for example, transportation, crafts, fishing, hunting, tar- and charcoal-making during parts of the year. And the farms often exchanged products, or, for example let a neighbour use a meadow if he in return left a sheep every year. The historical maps give us occasional such examples, but the land surveyor's information is scarce because information on these matters was not included in their task.¹²

The reason why the arable land traditionally has been considered as the main resource in rural society in the past seems to have a juridical rather than an economic explanation. Access to arable land was extremely important, of course. Taxes were often paid in grain, and the fields produced essential calories that could be stored as grain, bread or beer. Moreover, to own, or rent, even a small piece of arable land meant status, identity and, importantly, access to shares of the hamlets' collectively-owned resources such as woodlands, water and pasture outside the infield fence. In some regions this meant a lot more than grain growing for the household

economy, but without the formal right to arable land there was no right to the mentioned resources.¹³

The geometrical cadastral maps show numerous farms with only a couple of acres, far less than the six acres that is often estimated as the minimum acreage a household needed to be able to grow enough grain for consumption, taxes and the next year's seed.¹⁴ Such small acreages can only mean that grain growing was not the main part of the household economy. The available documentary sources do not show this pluri-functional economy, because the sources are often connected to taxation, and the taxes were connected to the arable land, irrespective of how the households' members spent their days or from where their main income came. The economy of the agrarian society was pluri-functional, and the members of the household shared their time between several different activities during shorter or longer periods of the year. To give one single example, almost every household in the parishes of Tjällmo and Godegård in northern Östergötland produced large quantities of nails to sell.¹⁵

When discussing how a family in rural Sweden used their available resources, and related to factors like acreage, number of livestock and the rate of, and interest in, cash crop farming one has to consider the reasons for the need to raise the productivity. I will briefly mention some theories about profit maximization. What incentives made the family increase their production? Is a maximal produce alternatively a maximal income always a self-obvious aim? The Russian agricultural-economist Alexander Tjajanov argued that the farming family did not have a maximal income as their goal. He also claimed that this kind of economy is not possible to study with the common economic theories, but has to be seen as one unit where all branches of activity (including trade and handicraft) must be considered. Tjajanov's theory rests on what he calls the self-exploitation, meaning that the families' degree of work is related to their consumption and reproduction needs. They will not put more effort in their work than needed to reach the desired level of consumption.¹⁶

This economy, built on the work of the households' members, led to unwillingness to take risks, argues Örjan Kardell, whose analysis accedes to Tjajanov, Flygare and Liljewall.¹⁷ Similar thoughts are found in Israelssons work. For example, to make their cow survive the winter could be far more important to the family than the amount of milk she can produce. The cow in the small family-run farm had several functions besides milk production; status, safeness, capital and producer of manure. In a capitalist economy system the cow would not be kept, unless she produced enough milk to earn her costs as well as a profit.¹⁸

What, then, made these careful and risk-reluctant farmers' households to change their behaviour and put a lot of effort, money, time, valuable land and manure to take up large-scale hop farming with hundreds or thousands hop poles? According to the studied tax registers, hop was not an important crop in the beginning of the seventeenth century. A couple of decades later large scale production was, according to the maps, regionally common.¹⁹

Maps

To use seventeenth-century sources requires a critical and thorough evaluation of their reliability for the current purpose. The information about cultivated fields contained in the maps has been studied several times by other researchers, and is considered to be reliable.²⁰ Information about the hay meadows is built on estimations and must, on the contrary, be used with care.²¹ The maps' reliability considering hop gardens has, in this study, been tested in three steps. First, it was necessary to decide if there were differences in accuracy or reliability depending on the individual land surveyor. This was done by analysing and comparing the information from several surveyors, text as well as symbols. Second, maps from different years were compared in order to see if the changing instructions from the Crown affected the maps' content and the surveyors' priorities. Third, the information on the maps was compared with other contemporary sources.²²

The analysis has shown that no important differences are associated with the individual surveyor or the changing content of the instructions. The latter seems to be a formalization of the surveyors practice, rather than a way for the Crown to affect their work in any direction. The maps were also compared with information about hop gardens in other sources, mainly tax registers and somewhat later maps. This comparison shows that the surveyors' reports on hop gardens are accurate enough.²³

Hops

The seventeenth-century pluri-active family household found several ways to provide economic sustenance. Agriculture is well documented concerning grain growing and animal husbandry. Other elements of the agrarian economy, regionally more important than grain and animals, are less studied. This article is based on a study including 100 farms in the provinces of Västergötland, Östergötland and Uppland. The initial study dealt with the farms' access to complementary resources, and in this context I have chosen to discuss the importance of hop-farming.²⁴

It is almost impossible to overestimate the importance of hops during this period of time. Hops helped to preserve beer, and beer was one of the most important sources of energy. Some one-third of the daily energy needs have been estimated to come from beer.²⁵ In bad times, the bines could be fed to the animals, and the small shoots could be eaten like asparagus. Beer-brewing was also possibly a way to save germinated barley that otherwise would have been useless as food. Besides this, hop has several useful functions; it has a mild sedative effect, and antibacterial qualities. The plant was grown both for sale and for the households' own needs. It was the only crop mentioned in the Swedish law. During the fifteenth century every farm must, according to the law, grow forty hop-poles. In the seventeenth century the amount was 200 poles per farm.²⁶ The Crown obviously considered it important that Sweden tried to grow its own hop, to limit the vulnerable import. The fact

that there was a strong demand for hops made it possible to sell a surplus of the produce with good profit, which made the crop relatively safe in an early commercial farming.

According to the maps, the hop-growing farms were frequent in certain areas, but scattered or missing in others. Why does it look like this? Is it perhaps the small farms, with lack of arable land, using a variety of available resources, including hop farming, to broaden their economy? Or is it an indication of regional specialization in cashcrops?

The study gave two results. First, the hop gardens are, independent of region, unevenly distributed among the studied farms. Concentrations of hop-growers alternate with scarce occurrences or complete absence. Second, there is a connection between the geographical conditions and the prevalence of hop growing farms. Farmsteads with hop gardens are often situated in the geographical zone between the grain producing plains and the forested regions. Västergötland and parts of Uppland appear as important hop producing regions, while hop growing in Östergötland is mainly concentrated in the northern parish of Tjällmo.

The regional survey indicates the presence of a regional division of work and the most striking example is the numerous hop gardens in Västergötland. A closer look shows that within the mentioned concentrations there was also a connection between the acreage of individual farms and access to hop gardens. In Västergötland and in the main grain producing districts in Uppland and Östergötland, the resource was mainly found among the larger farms, often single farmsteads, while in the forested regions in northern Uppland and northern Östergötland, there are examples when medium sized or small farms have hop gardens more often than the farms with larger acreages.

The hop gardens were usually defined by the amount of poles each farm possessed, but without descriptive concepts. See figure 1. I have estimated that a household, corresponding to a minimum of four adults, needed to grow 40–100 hop poles. This estimation is supported by the law, which ordered every full farm to grow at



FIGURE 1. *This photo shows how hop was, and still is, grown, on poles. Photo by Else-Marie Karlsson Strese.*

least 40 poles, and by the calculation of Karlsson Strese.²⁷ Considering a certain level of exchange between neighbours, I have estimated that an aggregated production of up to 100 poles per farm in one parish indicates production within the self subsistence economy. But within some regions, the produce by far exceeds the estimated total household needs for all the farms in the parish. The most obvious example is the large-scale hop production in Västergötland.

The calculation shows that ten of the 24 studied parishes produced hops exceeding the estimated aggregated household needs; Brodetorp, Stenstorp, Östra Tunhem, Håkantorps, Friggeråker, Långhem and Dannike in Västergötland, Tjällmo in Östergötland. Västland and Tierp in Uppland are important hop producing regions, but are missing in the diagram (figure 2) because the land surveyors have not mentioned the number of poles.²⁸ The most substantial hop gardens were generally found among the medium-sized and large farmsteads. The size of the hop gardens varied regionally. In Västergötland the average garden in each parish comprised

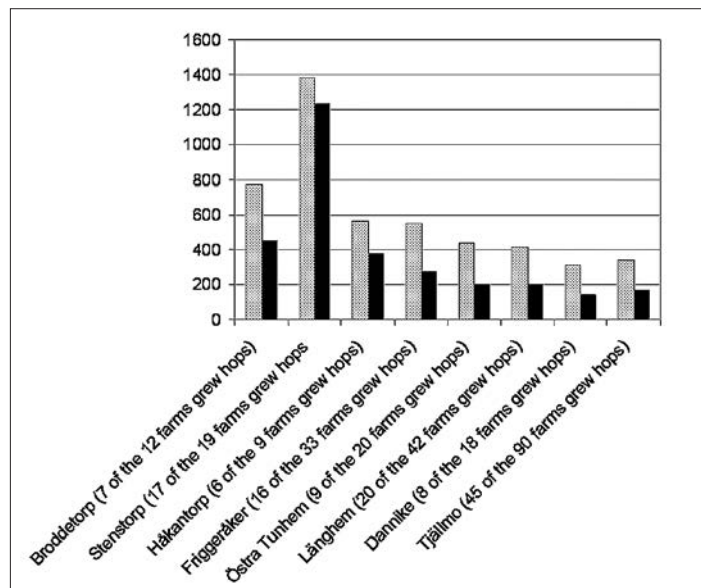


FIGURE 2. *The diagram shows eight of the ten parishes (Västland and Tierp parishes are missing because the surveyors did not register the number of poles) where the production of hops exceeds the aggregated estimated households' needs among all the farmsteads in the parish. Each household needed approximately 40 to 100 hop poles. The hop production in Stenstorp parish was over 1 200 poles per farm in average.*



FIGURE 3. Sundsjö, Nykyrka parish, Östergötland (D5:258-259, mapped 1635–1637). Sundsjö, with only 2 acres of arable land, represent the small farms with a diversified economy, sometimes including a small hop garden for household needs. Sundsjös hop garden is illustrated with the number ‘8’ within a non coloured small area close to the farm.

from 312 (Dannike) to 1 382 poles (Stenstorp) (see figure 2).

The concentrations of hop-growing farms on the maps obviously reveal two different categories of producers, with two different kinds of economies; the self subsistence farm and the commercial farm.

The first category contains small farms like Sundsjö (figure 3), with one or a few acres of arable land, sometimes with a small hop-garden consisting of 50–100 poles. An amount enough for the household need only.

On the other hand, we see farms like Hulje-

sten (figure 4) or Maln (figure 5), with large arable fields as well as extensive hop-gardens. Huljesten’s acreage is over ten times larger than the previously mentioned farm, Sundsjö, and the hop-garden contains 8 000 poles, to compare with the 50 to 100 poles needed for the household. I would say this is an economic specialization with hop as a cash crop. Huljesten was mapped 1644, one hundred years, or about four generations of farmers, before the big changes, the ‘agricultural revolution’ started around 1750. The farm is situated within Stenstorp, the most important hop-producing parish in my study.

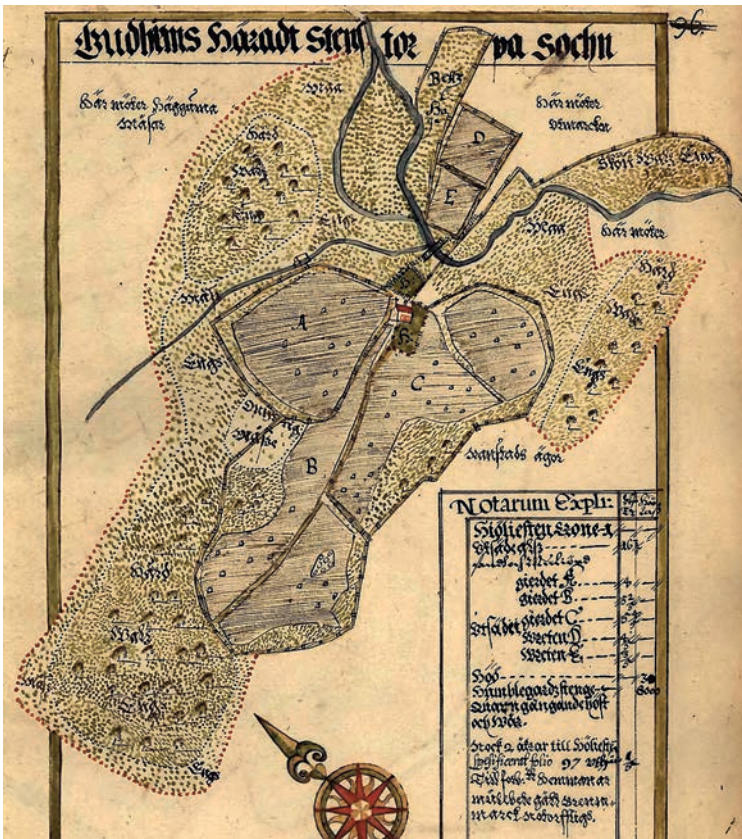


FIGURE 4. Huljesten, Stenstorp parish, Västergötland (P2:96, mapped 1644–1647). Huljesten represent the commercial farm, with large arable fields as well as a substantial hop garden, in this case 8 000 poles. The two hop gardens situated close to the farm buildings are illustrated with green colour and the letter 'h'.

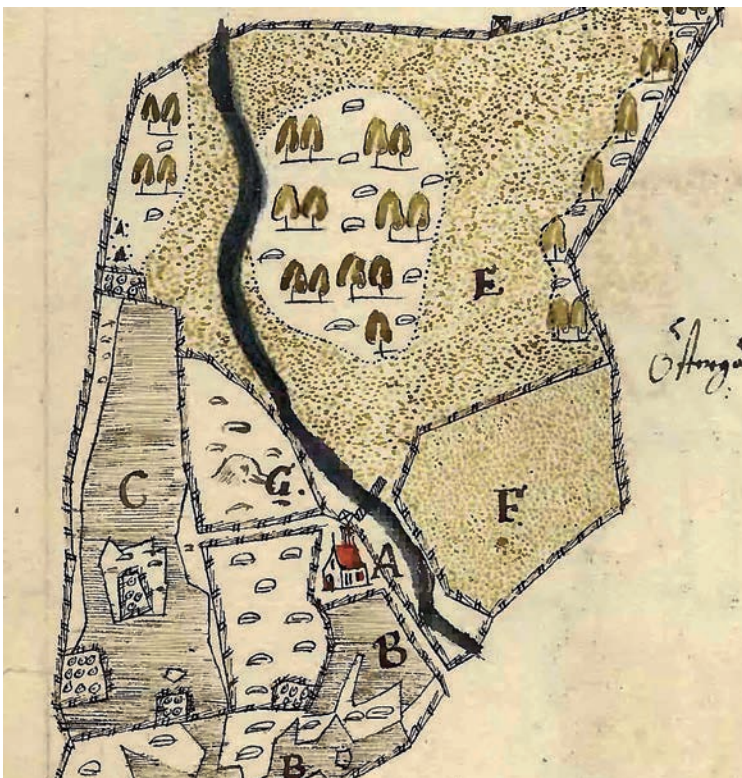


FIGURE 5. Maln, Tierp parish, Uppland (detail from A3:193, mapped 1640–1641 by Sven Månsson) represent the hop-districts in northern Uppland. The surveyor did not mention the number of poles, but the hop gardens were five, and substantial. The hop gardens are shown as white areas filled with round symbols. They are situated close to the cultivated fields, but on the border between arable land and less fertile, non-cultivated, land.

The number of hop poles in Maln is not mentioned by the land surveyor, but according to the size and number of the hop gardens belonging to this single farmstead, the crop was essential in the economy.

However, I see no signs among the 1100 studied farms of the 'modern' form of specialization that involves producing only one crop or product, and using the profit to buy daily necessities. I am well aware that this could have been the case in other regions. Subsistence farming was always the economic base among the studied farms in Västergötland, Östergötland and Uppland. Not even the farms with hop gardens containing several thousand poles had less acreage or hay than their non-hop-producing neighbours. This unwillingness to transfer arable land from grain or hay production to hop gardens in order to earn more money indicates, as I see it, family farmsteads that were run with a long-term view. The economy was built on a subsistence production, where grain and hay for household needs always was an important part. If possible, if the family could afford to transfer soil, manure etc, the economy could be supplemented with a substantial hop garden. I interpret this behaviour as an answer to the prevailing insecurity about grain prices as well as supply of food for sale, changing taxes due to the war and the constant worry of crop failure.

The explanation of why some regions develop commercial hop-farming could of course be large regional demands from the growing towns, and the strong need for beer to provide for the comprehensive gathering of armed forces during this time of wars. However, this is not the answer; several corresponding regions with similar geographical conditions and in a similar vicinity to a town, do not show the same development. This may indicate that in some towns the inhabitants grew hops, or that imported hops were available in some regions. There were obviously not one, but several, explanations for why certain farmsteads, within certain regions, developed the studied activities on a scale that exceeded the household's needs.

There seems to be three key factors that affect the social organization and make a devel-

opment towards commercial hop-farming possible.

First, the geographical location. The hop-growers are never found in the best grain producing, fertile, regions, nor in the wooded areas, but in between. They are found in regions with a large environmental variety, where the farms have access to several different resources. This environment seems to be the "engine" in the process of agricultural specialization.²⁹

Second. There is a long tradition in how the taxes and rents were paid. Eastern Sweden's farmers mainly paid their duties in kind, especially in grain. In western Sweden, money was to a larger extent used early for this purpose.³⁰ To pay in grain, you have to produce enough for the household needs, and to pay the rents. You are extremely vulnerable to bad harvests and to changing grain-prices. And most, or all, of the farmsteads resources; work, soil, manure etc, must in this case be concentrated to the arable fields. In western Sweden, where the largest hop-producers were found, the duties were mainly paid in cash. How the money was raised was of course of no interest to the landowner or the Crown. This system opened opportunities to adapt the economy and gave the farmer some more freedom to use the available resources efficiently.

And third, the highest degree of specialized hop-farms is found among the medium sized or larger farms. Not, as I assumed in my hypothesis, among the smaller farms. These larger farms obviously had enough manpower, enough manure and the possibilities to transfer good soil from grain- to hop producing.

To sum up, and to try to identify a few important differences between the commercial and the self subsistence farm, I would say that the family with the commercial farm was probably reasonably wealthy. In other words, they had enough arable fields and other important environmental resources to support the household without having to buy too much grain or hay. They could afford to spare some good soil for the plants, and to keep enough cattle to produce even more manure than needed for the grain fields. They also had the possibility to spare manpower and

time to tend to the demanding hops, a crop that took a lot of time to cultivate, to harvest and to dry. The families most likely paid a large part of their tax in cash, rather than in kind. This system gave them a larger economic freedom; the money could be raised in many different ways. The decision level was obviously on the family-, rather than the village level. This is illustrated by the fact that among the concentrations of commercial farmers, there are large differences between the neighbours in the same hamlet. One farmer might have a mill; while another neighbour has 2 000 hop poles, and a third none of this.

... and war

Why was there a need to sell cash crops? Why the need for money? As we have seen, it was not the smaller or poorer farms that took up large scale hop growing. Of course money was always needed to answer the Crown's growing demands in this time of wars. There was always an economic as well as human insecurity connected to the enlistment system, where administrative units comprising a group of farmers were responsible for one soldier.³¹ The soldier was usually a son from one of the families in each unit. This soldier could at anytime be injured or killed, and the unit then had to supply and arm another soldier to replace him. Another interesting and important reason for the need of cash is suggested by Nils Erik Villstrand: the possibility of hiring a soldier to avoid enlistment.³² There were always poor men, willing to take the enlisted soldiers place if the payment was good enough. This (expensive) opportunity to keep sons from the war required the family to find a complementary source of income, in order to increase their savings, and encouraged the growth of new products for which there was market demand alongside the subsistence farming. In his study Villstrand shows that many seventeenth-century farmers in Österbotten (now a region in Finland, but belonged for a substantial time to Sweden) increased their productivity by producing large amounts of tar. Tar was profitable; it was needed in the ship-industry. This allowed the farmers to pay the higher duties without

risking pauperization. Producing tar was also suitable because most Österbotten farmers had knowledge in tar-making, had access to woodlands and the work could be performed during the farm-year's calmer periods in the winter.³³

Adapting to the new situation and the escalating economic pressure caused by the wars, by adding on a profitable cash crop – hops – for which there was market demand is, in my point of view, very reasonable. By this strategy the family could keep their grain fields, their animals and hay meadows for household needs, and still sell hops to increase their income. Hop is a demanding plant, but it could be cultivated in one or several enclosures in comfortable distance to the farmstead, as the maps show, and be fertilized with household waste. If the farmers had the possibility to raise their productivity, their chances improved to survive the difficulties of the seventeenth century war economy without losing sons and husbands to enlistment, or without undermining their vulnerable economy. Maybe the women were the main hop farmers? The question need to be studied further, so far I can only argue that hop growing very well could be one of the Swedish farmers' strategies to handle the changing demands from the Crown without risking impoverishment.

Hop farming in Sweden

This paper deals with the question if the large scale hop farms shown on the geometrical cadastral maps reflect an increasing specialization in cash crops as an answer to the escalating demands from the Crown during the time of wars.

My first hypothesis presupposed a division of work. The initial study showed that there was possibly a regional division of work, because the hop farms were unevenly distributed. But the presence itself does not show the proportions, which means that the hypotheses cannot be supported without measuring the resources. After evaluating the produce of the farmsteads' hop gardens, regions with specialist farmsteads become visible. Within these regions, the produce exceeds the estimated total household needs for

all the farms in the parish. As shown in figure 2, usually around 50 per cent of the farms in each of these parishes produced hops. However, I see no indication of farms exhibiting signs of the ‘modern’ form of specialization that involves producing only one crop or product, and using the profit to buy daily necessities. Not even the farms with hop gardens containing several thousand poles had less acreage or hay than their non-hop-producing neighbours. This indicates, as I see it, family farmsteads built on subsistence farming, if possible supplemented with a cash crop or other products to sell (tar, charcoal, fish or fruit).

In the second hypothesis I supposed that larger hop gardens were associated with the smaller (in acreage) farms. The thought behind this was that these households, for economic security reasons, developed other sources of income to be able to buy or barter the grain they needed for consumption and taxation, and to increase their savings – money could at any time be required to replace a soldier or his equipment. This assumption was proved incorrect. The hop farms were usually found among the medium-sized or large farmsteads. The small farmsteads probably had several other sources of income that are not shown on the maps, such as transportation, crafts, day labour etc. The larger, and probably relatively wealthier, farmsteads obviously had a better starting position than the smaller ones, according to the results of this study. One possible explanation of Västergötland’s numerous and large hop gardens could be the tradition of how the taxes and rents were paid. In eastern Sweden (where Uppland and Östergötland are situated) peasants mainly paid their duties in kind, especially in grain. In western Sweden (Västergötland), money was used for this purpose to a larger extent. To pay the duties in grain, it was necessary to produce enough for the household needs (including seed corn) and also to pay the rents. This means a great vulnerability to bad harvests and to changing grain-prices, and most, if not all, of the household’s resources such as human labour, manure, and time, must be concentrated on the arable fields.

There were obviously several explanations for why certain farmsteads, within certain regions, developed hop farming on a scale that exceeded the household’s needs. Some factors were, according to this study, thoroughgoing, such as environmental resources and enough arable land to support the household without having to buy grain or hay. Other factors remain to be analysed, but some were probably of significant importance: the possibility to spare manpower and time on work beyond subsistence production; the possibility to spare some good soil for the plants (hop gardens and orchards); the possibility to keep enough cattle to produce even more manure than needed for the grain fields (hop gardens and orchards); and the possibility to pay substantial part of the taxes in cash, rather than in kind. This system meant greater economic freedom as the money could be raised in many different ways.

The question why, as in why the need for money and why take up time consuming large scale hop farming, can not be answered here, but discussed. I interpret this behaviour as an answer to the insecurity about prices as well as supply of food for sale, changing taxes due to the war and the constant worry of crop failure. Another important factor is studied by Villstrand (1992a, 1992b, 1996a, 1996b): the possibility of hiring a soldier to avoid enlistment required money, and encouraged the growth of new products for which there was market demand alongside the subsistence farming.

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Notes

- 1 Lindegren 1980, p. 11; Villstrand 1992a; Myrdal 1999, p. 228; Hallenberg 2001.
- 2 Brunius 1980, p. 12.
- 3 Villstrand 1996b, p. 62ff.; Stridsberg 1992.
- 4 Hannerberg 1971, p. 123; Myrdal & Söderberg 1991, p. 24.
- 5 Myrdal 1999, pp. 242, 255, 256, 297–302; Myrdal & Söderberg 1991, pp. 18–19; Larsson 1972, p. 149.
- 6 Hanssen 1952, p. 17; Gadd 1991, p. 20.
- 7 Andersson Palm 1991, p. 12; Gadd 1991, p. 65.
- 8 Myrdal 1999, p. 331.
- 9 Larsson 1972, p. 149; Myrdal & Söderberg 1991, pp. 18–19; Myrdal 1999, pp. 242, 255–256, 297–302.
- 10 Villstrand 1992a, pp. 24f.
- 11 Gadd 1991, p. 26.
- 12 Nilsson 2008, pp. 75–80.
- 13 Sveriges rikes lag 1734, Rättshistoriskt bibliotek 1984, p. 80; Holmbäck and Wessén 1962, p. 110f; Ahlberger 1988, p. 61; Wennersten & Sporrang 1995; Widgren 1995; Slotte 1999, p. 27.
- 14 Slicher van Bath 1963, pp. 134–135; Jansson 2005, pp. 47f.
- 15 Bergsten 1946.
- 16 Chayanov 1986.
- 17 Kardell 2004, pp. 25f.; Chayanov 1986; Flygare 1999; Liljewall 1999.
- 18 Israelsson 2005, pp. 262f.
- 19 Nilsson 2010.
- 20 Forssell 1939; Hedenstierna 1949; Göransson 1977; Vestbö Franzén 2004, p. 49.
- 21 Styffe 1856, pp. 253–255; Bergsten 1946; Hedenstierna 1949; Helmfrid 1962; Vestbö Franzén 2004.
- 22 Nilsson 2010.
- 23 Karlsson Strese, Karsvall & Tollin 2010, p. 219.
- 24 The studied parishes are: Tierp, Västland, Rasbo, Alunda, Knutby, Färentuna, Sänga, Adelsö (Uppland), Tjällmo, Kristberg, Nykyrka, Vinnersta, Orlanda, Allhelgona, Fivelstad (Östergötland) and Dannike, Finnekumla, Långhem, Tunhem, Håkantorps, Stenstorp, Friggeråker, Broddetorp, Gudhem (Västergötland).
- 25 Morell 1987, p. 7; Karlsson Strese 2008a, pp. 46f.; Karlsson Strese 2008b, p. 89; Karlsson Strese & Tollin 2008, p. 34.
- 26 Schlyter, J.W., 1862, pp. 231–215; Sveriges Rikes lag. Rättshistoriskt bibliotek 37, 1984, p. 68
- 27 Karlsson Strese 2008a, p. 47.
- 28 The calculation is made from tax registers and by measuring the size of the hop gardens on the maps.
- 29 Bergsten 1946; Hanssen 1952; Jansson 1998; Larsson 2009.
- 30 Gadd 1991, pp. 216, 218.
- 31 The Swedish expression for this administrative unit is *rote*.
- 32 Villstrand 1992a, 1992b, 1996a, 1996b
- 33 Villstrand 1992a, pp. 24f., 118–221, 165; 1999.

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 D5:258-259, Sundsjö, Nykyrka parish, Östergötland, 1635–1637.
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Maps, hops and war

by Pia Nilsson

Summary

Regional specialisation is already identifiable in the 16th century, perhaps earlier still, but the breakthrough of commercial specialisation in the Swedish countryside is associated with the onset of the agrarian revolution in about 1750. This technical complex included new crops, livestock breeds, crop sequences, fertilisers and implements. The present article shows that studies of the earlier geometrical cadastral maps (1630–1655) reveal advanced large-scale hop farming in certain regions and types of farmstead even a hundred years earlier. The information recorded by surveyors indicates two categories of hop-growing farmstead, one operating on a subsistence basis and the other commercially (cf. figs 3 and 4).

Regional demand from swelling towns and cities and the need of beer for the troops account for the development of commercial hop farming in certain regions, but this is not the whole answer: not all regions with similar geographic conditions and equidistant from a town or city present this development. The specialised farmsteads were mainly located within the well-resourced central region, and the most extensive hopyards of all were on the bigger farmsteads in

acreage terms; cf. figs 3–5). Subsistence production was always at the base of things, and obviously the large-scale growers had enough arable land and other necessary resources to meet their domestic needs, added to which, they could afford to run enough livestock to cover the fertilisation requirements of both arable fields and hopyards. They also had time to spare, suitable soil and, not least, manpower for other tasks than tilling fields and tending livestock.

But why did one need to sell produce if not to make up for a deficiency, such as a shortage of arable land? What was the money needed for? The Thirty Years War was in progress and taxation was heavy. Then again, the “rote” system meant that families could any moment be required to replace a casualty or his equipment. A reserve of ready cash was imperative. Further and deeper studies are needed, but one possible interpretation is that large-scale hop farming was one way (among several) of coping with the changed conditions following in the train of Sweden’s great-power aspirations, by increasing or diversifying output so as to generate financial margins.

(Translation by Kerstin & Roger Tanner)

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