

The Database Sweden's Agricultural Lands 1810 and 1870

A reconstruction of arable land, meadows and food production

User manual, version 1.0

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Introduction

The Database Sweden's Agricultural Lands 1810 and 1870 provides estimations of agricultural production at the local, regional and national level in Sweden during the agricultural revolution. The empirical core is figures of acreages of arable land, mostly at the jurisdiction district (*härad*) level, which have been compiled from a total of some 9,500 cadastral maps. In addition, the database includes figures for estimated seeds, harvests and number of farm animals. These latter series of data have been achieved by combining the acreages assessed with information from already existing databases on agricultural production and from the official agricultural statistics. The ambition has been to offer a uniform statistical material, based on the same sources and methods of compilation and processing for all parts of the country. The database is freely available for research.

The methodological approach of the project was presented in “Sweden’s agricultural revolution reassessed: A reconstruction of arable land and food production in 1810 and 1870”, published in *Agricultural History Review* vol 70 (Hallberg et al. 2022). The article includes a discussion on previous attempts to estimate Sweden’s 19th century agricultural production as well as an interpretation of the main results of the investigation. In a forthcoming article in the Swedish journal *Scandia*, scheduled for the first issue of 2023 (henceforth Nyström & Hallberg 2023), some source-critical issues brought to the fore by the enquiry are sorted out. We refer to these papers for a closer discussion on research strategy and methodological considerations. The main focus of the present user manual is to clarify the structure of the database, to explain the different variables included, and to give some advice with regards to the use of the data.

The database consists of the following components:

- A) Sheet 1: estimated acreages of arable land and meadows.
- B) Sheet 2: estimated seeds, harvests and number of farm animals
- C) Sheet 3: The composition of research areas

In addition, geo-coded shape files with vector data for the survey areas are provided.

The project was led by Erik Hallberg and funded by Riksbankens Jubileumsfond, IN16-0854:1. Project researchers were Erik Hallberg, Lars Nyström, Lennart Palm and Lotta Leijonhufvud. We hope that the material will stimulate new and interesting research within different fields of enquiry.

Terms and conditions of use

All data in the database is provided free of charge and can be used for any purpose provided that it is cited properly. It must not however be re-published or integrated into other public databases without our authorization. We appreciate your informing us when you publish work based on the material.

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Sheet 1: Estimated acreages of arable land and meadows

Sweden possesses one of the richest archives of historical maps in the world. The Swedish land survey was founded in 1628.¹ Early maps include so called geometrical cadasters over tens of thousands of farms and villages throughout the country. From the mid 18th century, the land survey was used in the carrying out of three major land reforms, the *storskifte* (1747–1829) the *enskifte* (1803–1827) and the *laga skifte* (1827–1928). Maps were also produced for the divisions of individual farmsteads (*hemmansklyvning*), in revisions of taxation or on request by the crown or individual land owners. As a general rule, maps were archived both at the regional and central level. Most of the contents in both archives were digitalized in the early 2000s and are freely and easily accessible via Internet.²

Sheet 1 presents the project's estimates for acreages of arable land and meadows in 1810 and 1870. It is based on evidence from approximately 9,500 land survey acts. Some of the maps cover an entire village (or even larger areas), others just an individual farmstead. From each act two pieces of information have been collected: the acreage of arable and meadow lands and the size of the charted area measured in *mantal*, the official tax assessment unit of land in Sweden during the period of enquiry. In general, this information is easily available in the protocols of each map.

The basic unit of the investigation is the *härad*, the local jurisdiction district. For each district the total acreage and the total *mantal* of all map acts used in the investigation have been summarized. This way the acreage/*mantal* ratio could be calculated. This ratio was then multiplied with the total number of *mantal* within the district in order to estimate the total acreage of arable land and meadows within the area in question.

Principles in the data collection

The collection of maps has been guided by the following principles:

Firstly, the maps should be from a year as close as possible to the two years in the enquiry. Maps that are more than 10 years older/younger than these years are only used in districts where it has been hard to identify a sufficient number of useable maps. In addition, we have intended to balance older and newer maps so that the average year of enquiry (weighted on the basis of the *mantal*) would be close to 1810/1870.

Secondly, the choice of maps should reflect the geographical composition of the survey area. We have searched for maps from all parishes. The ambition was to use more maps from larger parishes (measured in *mantal*) than from small parishes. However, given the uneven availability of useable land survey acts, this goal must often be balanced by other considerations.

In the collection of data, the proceedings of each land survey act have been checked in order to verify that the map is based on a new charting of the land. Land survey acts based on the re-utilization of older maps have been excluded, unless it is clear from the protocols that a recent charting of the land has been carried out in order to update for land reclamations.

¹ For an overview, see (forthcoming)

² https://historiskakartor.lantmateriet.se/arken/s/advancedsearch.html?locale=en_US

For reasons of quality and project economy, maps that have lacked easily accessible information on land and/or *mantal* have often been avoided, i.e. maps that are difficult to read due to calligraphy, perseveration or digital reproduction, maps where acreages must be summed up strip by strip from the proceedings or maps that lack information on for example the number of *mantal* charted. Only for areas where we have faced severe problems to reach a sufficient number of observations have such time-consuming maps been utilized. For some maps we have chosen not to make use of all available information in the act. Instead, a random selection of the individual farms charted has been used. This applies both to maps that for some reason were complicated to process and some very big maps, covering a large number of *mantal*.

The ambition has been to collect information from at least 15 maps covering at least 30 land register units for each survey area. Given the availability of useable maps, a lower number must however be accepted for some districts. Figure 1 and Tables 1–2 give an overview of the material collected in terms of distribution in time and types of maps used.

Risk analysis

In total, the maps used in the project cover 9.5 % of the Sweden's *mantal* in 1810 and 6.2 % in 1870. Is that enough for high-quality estimates of the actual acreages?

The estimation of acreages at the survey area level assumes that the acreage/*mantal* ratio of the sample is valid also for the farms and villages that are not covered. We cannot know if that was the case. In practice, the acreage/*mantal* ratio varied considerably between individual farms and villages also within the same research areas. The survey is based on a limited number of observations (maps) per district. In addition, the statistical weight of the observations varies. Large maps, covering a large number of *mantal*, influence district level estimations much more than small maps, covering perhaps just a single farm.

The risk for random errors in the material was tested for following a bootstrap approach (based on random replacement of samples). According to the test, the average survey area level 95% confidence interval is at c. 20% up and down and at the national level at 2.0–2.5% (up and down). There is thus a considerable margin of error at the district level while the aggregated level figures are more statistically solid. For a closer presentation of the bootstrap test, see Hallberg et al. 2022.

In addition to the question of random errors, the risk of systematic errors must be addressed. Importantly, the district level samples were not chosen at random. Only farms and villages covered by an act of land surveys close to the years of enquiry could be included. There is a risk that farms and villages that for one reason or another were mapped in these periods differed in terms of acreage/*mantal* compared to farms and villages that were *not* mapped.

Table 2 gives an overview of the different types of maps used in the investigation. For 1810 we use many late maps from the *storskifte* reform (a consolidation of strips, mainly within the open field system). It is possible that late consolidated (*storskiftad*) land had a slower growth of land reclamation than land that had been consolidated early in the process. If so, our estimated figures might be too low. A similar analysis can be made for 1870 when we use many late *laga skifte* maps. On the other hand, the investigation also includes other types of maps. For 1810, early *enskifte* (enclosure) maps constitute an important category. These maps

capture the forerunners in the movement of radical enclosures in Sweden. For 1870, farm partition maps count for almost half the *mantal* covered.

Another issue that might influence results is land categories, that is the distribution between *skatte* (freeholders' land), *krono* (Crown land) and *frälse* (tax-reduced, noble land) farms. All three categories are present in the sample, but it has not been possible to establish the distribution between them for any of the measurement years. Characteristic for Sweden is that land owned by the peasantry, the Crown and the nobility often lay side by side in the same villages. When the villages passed through the previously mentioned land reforms, all land was charted. However, one category that is probably underrepresented is the manors of the nobility. These were most often *not* part of the village system and were consequently not included when different land reforms were carried out in villages. Nevertheless, owners of manors often used the Land survey to assess their property. Such maps are thus included in the investigation.

In the article “Sweden’s agricultural revolution reassessed...” (Hallberg et al. 2022), the risk for a biased sample was tested for using the method of triangulation, that is by comparing our figures with other series of data. Crosschecks were made with descriptions of the early economic maps produced in some provinces in the 1860s and 1870s and with high-quality local enquiries carried out in the collection of official agricultural statistics in some areas around 1870. At the aggregated level, our results for 1870 come very close to these sources. This outcome indicates that the results do not suffer from any systematic error. At the district level, figures differed somewhat more, on average 10 % (up or down) compared to the economic maps and 14,5 % compared to the local statistical enquiries.

One final factor that must be taken into account is time. It has been our ambition to use maps produced as close to 1810/1870 as possible, and to balance old maps with new ones so that the weighted year of enquiry comes close to these years. Nevertheless, given the map stock available locally, in many cases we have missed the target, sometimes even by a decade. As the pace of land reclamation was fast, especially around 1870, this factor will influence results. Survey areas where the maps used were on average 5–10 years older will most probably underestimate the real acreage. Once figures are aggregated at the regional or national level this problem is reduced. It should nevertheless be noted that for both 1810 and 1870 the (weighted) average time of when the maps used in the project were produced is slightly too early (see Table 1).

From the figures available in the database, it is possible to produce revised area calculations that also take the time factor into account, namely by combining the information on weighted average years for the two survey years (columns I and T) with a calculation of the yearly rate of new cultivation between these years. Such a calculation cannot however take into account the differences in speed in land reclamation around 1870 compared to around 1810.

Regional comments

The starting point for the project has been to use a uniform source material and research methodology for all parts of Sweden. At the same time there are regional differences regarding farming systems for example or the content of the sources. Some of these differences are commented on below:

The towns and the Lapland region (upland parts of AC and BD counties)

For the towns and the sub-arctic Lapland region there are extremely few useable maps. As a consequence, the project's methodology could not be applied here. These areas are thus not included in Sheet 1. In Sheet 2 we assume that acreages in the official agricultural statistics for these areas were underestimated to the same degree as for the country as a whole.

The Scania region (L and M counties)

In the Scania region the project faced problems due to the re-utilization of older maps in land surveys. In the early 19th century, large parts of the fertile plains areas in Scania were enclosed according to the *enskifte* act. New maps were seldom produced in this process, however. Instead, land surveyors made a new division of the land from the maps produced in the previous *storskifte*. Most maps are thus a few decades too old and must be discarded from the enquiry. In order to identify a sufficient number of observations, the project had to make use of sub-optimal maps, including maps that were difficult and time-consuming to process and maps that were produced earlier or later than accepted for other regions in the country. Most of the few maps preceding 1790 used in the project are from Scania.

The re-utilization of old maps was also a recurrent problem in Scania for 1870. In the acts of *hemmansklyvning* (divisions of farmsteads), land surveyors frequently made use of old *laga skifte* maps, often without any revisions. Such maps have only been accepted for distinct plains areas, where practically all land was already arable at the time of the *laga skifte* reform. In general, the availability of useful maps in Scania around 1870 was nevertheless good.

The Hälsingland region (northern part of X county) and Darlacarlia (W County)

In the Hälsingland and Darlacarlia regions, very few maps included information of the *mantal* of the charted farms. For Hälsingland this information was instead collected from tax records (*mantalslängder, jordeböcker*). In Darlacarlia, however, most tax records also lack information on the *mantal* of each farm. Fortunately, it is clear from contemporary material how the *mantal* in the county was calculated. In lower Darlacarlia, the *mantal* of each land register unit was based on the quantities of charcoal (measured in *stigar*) it had to deliver as part of its annual taxes. In upper Darlacarlia, the deliveries of fire wood (measured in *lass*) were used as a basis. As these obligations are accounted for in the tax registers it was possible to establish the *mantal* of the land register units included in the investigation.

For 1870 the calculations of the *mantal* charted in Darlacarlia maps commonly included an additional step. Most of the maps from this period cover individual farmsteads that were part of larger land register units. In order to assess the *mantal* of the individual farmstead it was necessary to determine its share of the entire land register unit. In practice this implies that the unit which was surveyed in 1870 must be identified in an earlier *storskifte* map, where the land register unit was divided between the individual farmsteads. The share of the individual farm in this division was used to establish its share of the total *mantal* of the unit in question (which in turn was calculated from the deliveries of charcoal or fire wood as described above).

There are several steps in these calculations and each of them also involves risks. Not all land register units in land survey acts could be identified with certainty in the tax records. Not all farmsteads in maps from 1870 could be identified in earlier *storskifte* maps. At the same time Darlacarlia suffers from a general scarcity of useable maps, especially for 1870 – which was probably due to the fact that the province long remained excluded from the *laga skifte* reform. The acreages presented for the region should thus be interpreted with extra caution.

The Hälsingland (northern X county), Ångermanland and Medelpad regions (Y county)

Along large parts of the Norrland coastline, the local farming system around 1810 included other categories of land than arable and meadow: in Hälsingland *sval* and *nybruk* and in Ångermanland and Medelpad *åkerslåt*, respectively. These lands were all former meadows that in the early 19th century were used under a system of primitive convertible husbandry. In Hälsingland land surveyors often accounted for these types of land together with the arable (typically under the title “arable, *sval* and *nybruk*”). In Ångermanland and Medelpad land surveyors instead tended to group *åkerslåt* together with meadows. Based on the maps where the different types of land were accounted for separately, we have made an estimation of acreages/*mantal* of three categories of land for these regions: 1) arable; 2) *sval*, *nybruk* and *åkerslåt*; and finally, 3) meadows (Table 3). In the database, the acreages of *sval*, *nybruk* and *åkerslåt* have been split 50–50 between arable and meadow.

Northern Sweden in general (W, X, Y, Z, AC and BD counties)

There are fewer useable maps of the northern, sparsely populated, regions than of the more densely populated southern and central parts of Sweden. In order to get a satisfactory statistical base for the project’s estimation it has for that reason been necessary to merge jurisdiction districts into larger survey areas.

On the acreages of meadows

The main aim of the project has been to assess the acreages of arable land. In addition, estimated acreages of meadows are included in the database. For several reasons these figures suffer from a higher degree of uncertainty.

As stated, the key in the estimations of acreages is the acreage/*mantal* ratio. The methodology rests on the assumption that the acreage/*mantal* ratio for the maps collected in a survey area is valid also for the farms and villages that are not included in the enquiry. It is obvious from our investigation that the variation in the acreage/*mantal* ratio within the survey areas is higher for the meadows than for arable land. As a consequence, the margin of error of estimations of meadow also becomes wider.

Another factor to take into account is that many maps used in the investigation did not cover forests or wastelands. Especially in northern Sweden such land was partly used for the collection of hay. Natural haybogs, often located several miles from the farmstead, were often a strategic resource for farmers. Such meadows will often not be covered by the investigation.

For 1870 there is another problem, namely the land category “cultivable land” (*odlingsmark*), i.e. land that was not yet arable but was suitable for cultivation. It is evident from the map stock that most land classified as “cultivable land” was in fact meadows, but pastures could also be labelled as such. On some maps, meadows and cultivable land are reported separately, on others they are combined under one category (“meadows and cultivable land”). In addition, there are maps that only report meadows. In the database, both meadows and cultivable land have been accounted for as meadows. The category “cultivable land” also exists in 1810, but is rather uncommon in the maps from that time.

Overview of Sheet 1

Column	Year	Content	Further information
A	-	Name of survey area	

B	-	Area code	See the comments on Sheet 3.
C	-	County name	
D	-	County number	After the order used in most official publications.
E		County letter	
F	1810	Number of maps used	
G	1810	Total number of <i>mantal</i> covered	
H	1810	Compiled acreage of arable land, hectares	
I	1810	Compiled acreage of meadows, hectares	
J	1810	Weighted average year of enquiry	Average year of observation. Each observation weighted after number of <i>mantal</i> included.
K	1810	Arable land/ <i>mantal</i> (hectares)	H/G
L	1810	Meadows/ <i>mantal</i>	I/G
M	1810	Total number of <i>mantal</i> in the survey area in 1810	Source: Parish level figures in L. Palm, <i>Sverige 1810</i>
N	1810	Level of coverage	G/M (expressed as percent)
O	1810	Estimated total acreage of arable land (hectares)	K*M
P	1810	Estimated total acreage of meadows (hectares)	L*M
Q	1870	Number of maps used	
R	1870	Total number of <i>mantal</i> covered	
S	1870	Compiled acreage of arable land, hectares	
T	1870	Compiled acreage of meadows, hectares	Includes meadows and <i>odlingsmark</i> , “cultivable land”.
U	1870	Weighted average year of enquiry	Average year of observation. Each observation weighted after number of <i>mantal</i> included.
V	1870	Arable land/ <i>mantal</i> (hectares)	S/R
W	1870	Meadows/ <i>mantal</i>	T/R
X	1870	Total number of <i>mantal</i> in the survey area in 1870	Source: parish level figures from <i>BiSOS, Jordbruk och boskapsskötsel</i> (1870 or nearby year, see sheet 2, column XX).

Y	1870	Level of coverage	R/X (expressed as percent)
Z	1870	Estimated total acreage of arable land (hectares)	V*X
AA	1870	Estimated total acreage of meadows (hectares)	W*X

Sheet 2: Production and population

In the second sheet of the database, estimated acreages are combined with data from the official agricultural statistics and other historical databases in order to assess agricultural production in 1810 and 1870. Figures on the number of farm animals and population are also included.

It should be noted that the survey areas for Sheet 2 differ slightly from Sheet 1. Due to the way the data is presented in the official agricultural statistics around 1870, it was necessary to merge some of the survey areas.

The data from the official agricultural statistics for 1810 used in the database are from Palm & Linde's parish level compilation in *Sverige 1810*. It should be noted that these figures are for 1805, not for 1810. Data from the official statistics from 1870 (or a nearby year) have been compiled within the project.

From acreage to harvest 1810

The problems of the early Swedish agricultural statistics are discussed in other project publications (Hallberg et al 2022; Nyström & Hallberg 2023). We regard the data on acreages, seeds, sowing density and harvest ratios as unreliable. Trustworthy are merely data on the proportion of the arable land that each year lay fallow and the proportion between the different crops sown in the fields. Only these latter relative measurements are thus used in the database.

In the reconstruction we use the project's acreages (Sheet 1) and the official statistics figures on the proportion of land lying fallow. We assume potatoes and peas were sown on the fallow land (except for in areas where over 90% of the land was sown each year). We further assume different crops were sown in the same proportions as according to official statistics.

No early 19th century statistics on sowing density for different crops exist. Instead, figures for 1870 had to be used. These are in turn a result of a reconstruction that combined figures presented by Gustav Sundbärg on sowing density between different crops with county-level data from the agricultural statistics of 1870 on sowing density for spring grain, autumn grain, potatoes and peas, as well as the proportions of seeds for different crops.

In practice, the project's calculation of seeds includes the following steps: first we create a fictitious auxiliary variable: namely the acreage you will get if you combine the official statistics' figures of seeds and the proportion of the land annually lying fallow with the project's estimates of seed density. This fictitious acreage is then compared to the project acreage. This way a "ratio of revision" can be established which in the next step is used to revise the official statistics' figures on seeds.

Gross harvests are calculated using county-level yield ratios according to a compilation of yearly yield reports made by Rodney Edvinsson. The figures used are county-level averages for the years 1818–1823. No earlier reliable and comprehensive data can be identified.

From acreage to harvests 1870

For 1870 the acreages of the project are combined with data from the official agricultural statistics, *BiSOS, Jordbruk och boskapsskötsel*. This latter series only started up in 1865. By 1870 it still suffered from a certain lack of uniformity. In some of the counties, figures were presented at the parish level, in others at the district level and in some cases, districts have been merged and the figures presented as one joint post. There are also lacunae in the material. The compilation of data has been complicated and time-consuming. In most cases we use figures for 1870. For some areas, however, we had to use figures from another year although as close to 1870 as possible.

We accept the BiSOS figures regarding the use of the arable land (proportion between seeds and proportion lying fallow, respectively) and sowing density. Seeds are adjusted after the ratio acreage according to the project/acreage according to BiSOS. If the project's results indicate that a certain district had 25% more arable land in 1870 than accounted for by BiSOS, we thus raise the BiSOS seeds accordingly.

We do not accept BiSOS' yield ratios. Gross harvests are instead calculated using county average county-level yield ratios for the years 1866–1874 according to yearly harvest reports. Importantly, we thus use the same source for 1870 as for 1810. The material has been compiled by Rodney Edvinsson and (after 1870) by us. We thank Edvinsson for sharing his research material.

It must be noted that yield ratios used for both 1810 and 1870 are at the county level. It has not been possible to establish any survey area level series. This must be taken into account in the use of the material.

Farm animals 1810

Figures on the number of farm animals are taken from Palm & Linde's database, *Sverige 1810*. These are based on a compilation of some 9,000 probate inventories from all over the country. We accept Palms & Linde's figures without modifications. For a discussion on meat and milk yields etc. per animal, see Hallberg et al 2022.

Farm animals 1870

For 1870 we accept the figures of number of farm animals provided by BiSOS. It is likely that these numbers are too low. In Hallberg et al 2022 we raise all animal numbers by 10%. In the same article, a discussion on meat and milk yields etc. per animal is also included.

Population 1805–1880

The figures presented in the database are from *BiSOS A: Befolkningsstatistik 1880*, part 2 (<https://share.scb.se/ov9993/data/historisk%20statistik/BISOS%201851-1917%2FBISOS%20A%20Befolkning%201851-1910%2FBefolkning-A-1880-andra.pdf>).

Parish-level figures have been merged according to the survey areas used in Sheet 2. Table 4 reports figures for the survey areas in Sheet 1 that are merged into larger areas in Sheet 2.

Overview of Sheet 2

Column	Year	Content	Further information
A	-	Name of survey area	
B	-	Area code	The area codes are explained in the comments on Sheet 3.
C	-	Type of area	“Rural”, “Lapland” or “Town”. Only the rural survey areas are covered by the estimated acreages in Sheet 1.
D	-	County affiliation	
E	-	County number	The numbering follows the order used in most official publications
F		County letter	
G	1810	<i>Mantal</i>	N of <i>mantal</i> in the survey area c. 1810 after Palm, Lennart (2014), <i>The database Sweden 1570-1810: population, agriculture, land ownership</i> .
H	1810	Horses	Number of farm animals after Palm, <i>The database Sweden 1570-1810</i> (figures based on probate inventories)
I	1810	Oxen	
J	1810	Bullocks	
K	1810	Bulls	
L	1810	Cows	
M	1810	Heifers	
N	1810	Sheep	
O	1810	Goats	
P	1810	Hogs (older)	
Q	1810	Hogs (younger)	
R	1810	Arable 1 (official statistics)	Acreage of “öppen jord” in hectares according to the official agricultural statistics 1805, as compiled in Palm, <i>The database Sweden 1570-1810</i> .
S	1810	Fallow	Percentage of the arable land lying fallow each year, according to the official agricultural statistics 1805, as compiled in Palm, <i>The database Sweden 1570-1810</i> .
T	1810	Arable 2 (official statistics)	Acreage of arable land in hectares calculated from seeds and fallow according to the official statistics 1805 assuming sowing density according to column AL–AR.
U	1810	Project arable	Sheet 1, column O (hectares)
V	1810	Project meadows	Sheet 1, column P (hectares)
W	1810	Ratio of revision	U/T This ratio is then used to revise seeds in the official statistics
X	1810	Estimated seeds: Rye	

			Seeds in hectoliter according to the official statistics 1805 (as compiled by Palm, <i>The database Sweden 1570-1810</i>) * W (Ratio of revision)
Y	1810	Estimated seeds: Wheat	
Z	1810	Estimated seeds: Barley	
AA	1810	Estimated seeds: Oats	
AB	1810	Estimated seeds: Dredge corn	
AC	1810	Estimated seeds: Peas	
AD	1810	Estimated seeds: Potatoes	Estimated seeds X-AD * harvest ratios according to county level harvest reports 1818–1823 as compiled by Rodney Edvinsson
AE		Estimated harvest: Rye	
AF	1810	Estimated harvest: Wheat	
AG	1810	Estimated harvest: Barley	
AH	1810	Estimated seeds: Oats	
AI	1810	Estimated seeds: Dredge corn	
AJ	1810	Estimated seeds: Peas	Estimated county level sowing density ratios (hectoliters/hectare). The estimations are based on figures from the BiSOS official agricultural statistics 1870 and Sundbärg, Gustav (1913), <i>Tankar i utvandringsfrågan</i> , p. 92.
AK	1810	Estimated seeds: Potatoes	
AL	1810	Sowing density: Rye	
AM	1810	Sowing density: Wheat	
AN	1810	Sowing density: Barley	
AO	1810	Sowing density: Oats	
AP	1810	Sowing density: Dredge corn	Total <i>mantal</i> according to the BiSOS official agricultural statistics 1870 (or nearby year, see column BD)
AQ	1810	Sowing density: Peas	
AR	1810	Sowing density: Potatoes	
AS	1870	<i>Mantal</i>	
AT	1870	Arable, BiSOS	
AU	1870	Meadows, BiSOS	
AV	1870	Horses	Number of farm animals according to the Official statistics (BiSOS 1870 or nearby year, see column BD). <i>Please note that these are unrevised figures that might be too low.</i>
AW	1870	Oxen	
AX	1870	Bulls	
AY	1870	Cows	
AZ	1870	Bullocks and heifers	
BA	1870	Sheep	
BB	1870	Goats	Year of <i>BiSOS Agriculture</i> used as source for column AS–BC.
BC	1870	Hogs	
BD	1870	Year of compilation	
BE	1870	Project arable	
BF	1870	Project meadows	
BG	1870	Ratio of revision	
BH	1870	Estimated seeds: Winter wheat	Seeds according to the BiSOS statistics (year according to column BD) * BG
BI	1870	Estimated seeds: Spring wheat	

BJ	1870	Estimated seeds: Winter rye	
BK	1870	Estimated seeds: Spring rye	
BL	1870	Estimated seeds: Barley	
BM	1870	Estimated seeds: Oats	
BN	1870	Estimated seeds: Dredge corn	
BO	1870	Estimated seeds: Peas	
BP	1870	Estimated seeds: Potatoes	
BQ	1870	Estimated harvest: winter wheat	Seeds according to BH–BP * average yield ratios 1866–1874 according to county-level harvest reports (compiled by Rodney Edvinsson and us)
BR	1870	Estimated harvest: Spring wheat	
BS	1870	Estimated harvest: Winter rye	
BT	1870	Estimated harvest: Spring rye	
BU	1870	Estimated harvest: Barley	
BV	1870	Estimated harvest: Oats	
BW	1870	Estimated harvest: Dredge corn	
BX	1870	Estimated harvest: Peas	
BY	1870	Estimated harvest: Potatoes	
BZ	1805	Population 1805	Population according to BiSOS Befolkning 1880 (parish-level figures compiled using the project's survey areas).
CA	1810	Population 1810	
CB	1820	Population 1820	
CC	1830	Population 1830	
CD	1840	Population 1840	
CE	1850	Population 1850	
CF	1860	Population 1860	
CG	1870	Population 1870	
CH	1880	Population 1880	

Sheet 3: Geographical information

Sheet 3 includes detailed information on the survey areas used in the investigation. The sheet is organized at the parish level. For each parish we specify which survey area it belongs to according to the divisions used in Sheet 1 and Sheet 2. In addition, the geographical extent of counties, traditional provinces and jurisdictional districts is accounted for.

On the survey areas

For most of the country, the survey areas are based on the jurisdictional districts: “*härader*” in south and central Sweden, “*tingslag*” in the north. Given the availability of sources, some jurisdictional districts have been merged into larger units in the database. For Sheet 1 this applies mainly to Northern Sweden. For Sheet 2 additional amalgamations have been made (see Table 4). Towns and the Lapland region (from which there are no project acreages) are included in Sheet 2, but not in Sheet 1.

There is a slight difference between the way survey areas in 1810 and 1870 are composed in the database:

For 1810 we combine information from land survey acts with data (for example the total *mantal* of each area) from the database *Sverige 1570–1810*. The latter material is organized at the parish level. It does not take into account the cases where the parish and district boundaries do not coincide. Parishes that were divided between different districts are always reported in their entirety as belonging to only one district.

For 1870 we combine information from land survey acts with data (for example the *mantal*) from the official agricultural statistics, *BiSOS Jordbruk och boskapsskötsel* [Contributions to the Official Statistics of Sweden. Agriculture and livestock management]. The latter material is mostly organized at the district level. If parishes were split between two or more districts, the agricultural statistics are usually reported accordingly.

Between 1810 and 1870 borders between districts were sometimes revised. In most cases, the database follows the division used in 1870.

Linking the database to the database *Sverige 1570–1810*

The parish division used in Sheet 3 is based on Lennart Palm’s and Martin Linde’s database, *Sverige 1570–1810*. It corresponds to the situation around 1750.

By linking Sheet 3 to Palm’s and Linde’s database (preferably using the RSV area code) it is possible to re-organize the latter in accordance to the survey area division used in this present database. In this way the data provided in the two databases can be combined.

Shape files

As a service to the user, .shp shape files corresponding to the geographical divisions used for Sheet 1 (acreages) and Sheet 2 (production and population) are provided. The shape files and the excel file can be linked using the area codes (see below) or the names of the survey areas.

The shape files have been constructed from the GIS-database on historical territorial boundaries produced by *Riksarkivet*, the National Archive of Sweden (see https://riksarkivet.se/Media/pdf-filer/dvs/Historiska_GIS_Kartor_Sverige.pdf). A parish-level layer for 1810 has been used as starting-point.

The *Riksarkivet* files are built up with parishes as basic units. Parishes that in fact were divided between different jurisdictional districts will thus always be presented as belonging to just one district in the shape files provided.

Area codes

In order to facilitate the use of the database, each survey area has been given an area code. The codes are unique for this present database. They have been constructed according to the following principles:

The first digit indicates type of area: 1 = rural survey area covered by the enquiry; 8 = Lapland region (no maps studied); 9 = towns (no maps studied).

The next two digits show county affiliation. We follow traditional numbering from 01 (Stockholm city) to 25 (Norrbotten County).

Digits four and five number the survey areas within a county. We follow the order used in the official agricultural statistics around 1870. It could be noted that most statistical publications of the time use a similar sequence of the districts. The rural survey areas, Lapland areas and towns are numbered separately.

The last digit is used to mark when district and survey areas have been merged into larger areas. The digit “0” indicates that no agglomerations have been made, i.e. that the survey area corresponds to a *härad* or a *tingslag* existing during the period of study. The digit “5” indicates that the survey area has been created by merging two or more such areas. The digit “6” is only utilized for areas in Sheet 2. It indicates that two or more survey areas according to the division used in Sheet 1 have been merged into larger units.

In the default mode of the database, survey areas are organized after area codes. This means that the areas from which we have data of acreages from land survey maps are listed first, according to the standard order in contemporary statistics publications. Identical areas in Sheet 1 and Sheet 2 also have the same area codes.

Overview of Sheet 3

Column	Description	Further information
A	Parish name (Palm)	Parish name according to the database Sverige 1570–1810
B	RSV-code	Parish codes according to the database Sverige 1570–1810 (after the official codes used by SCB)
C	Parish name (Riksarkivet)	Parish name according to Riksarkivet's geographical database
D	G unit	Unit code according to Riksarkivet's geographical database
E	County name	
F	County number	After the order used in most official publications
G	County letter	
H	Traditional province "landskap"	After the database <i>Sverige 1570–1810</i> .
I	District, "härad", according to the "standard" division	
J	District, "härad", according to the division used in the Emigrationsutredningen publications	
K	Research area Sheet 1	
L	Area code Sheet 1	See the main text for information on the Area codes
M	Research area Sheet 2	
N	Area code Sheet 2	

Overview of shape files attribute tables

Column	Description
Fid	Field ID, generated by the QGIS programme
Name	Name of the Survey area, identical to the name according to column A in Sheet 1 and Sheet 2 in the database.
Area code	Area code, identical to the area code according to column A in Sheet 1 and Sheet 2 in the database. Please note that the shape file corresponding to Sheet 1 also includes Lapland and the towns, which are excluded in the Excel sheet.