



# Categorization of livestock animals in Switzerland

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## **Edition Notice**

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# 1. Prologue

Livestock are responsible for a great share of agricultural net production. On the other hand, livestock activities are often associated with negative impacts on the environment and partly also on human health. Unsurprisingly, the economical and/or environmental impact of livestock husbandry is usually of high priority on the national political agendas. Moreover, various international conventions such as the UNECE's "Convention on Long-range Transboundary Air Pollution", the "United Nations Framework Convention on Climate Change" as well as the "Convention for the Protection of the marine Environment of the North-East Atlantic" (the OSPAR Convention) deal in one way or another with the adverse effects of livestock operations. Activities under these conventions include the measurement, reporting and monitoring of polluting agents and consequently the establishment of emission inventories and balances. For a thorough assessment of the repercussion of livestock activities in this context, it is imperative to build on reliable population data. The importance of consistent population numbers is further stressed by the fact that a great share of the yearly fluctuations in emission inventories and balances can often be explained by the fluctuating animal populations. The respective data is usually assessed during agricultural census. As agricultural policies and practices change over the years so do agricultural census methodologies. As a consequence it is therefore often challenging to reconstruct consistent and reliable time series of livestock population data. Furthermore, livestock categories as assessed during the census should match the categories and subcategories for which scientifically data on animal characteristics (weight, feed intake, nitrogen-excretion, methane emission etc.) is available. Since this is not always the case, appropriate category conversion procedures have to be established. In the following, the assessment of livestock population data in Switzerland will be reviewed. In a second step an attempt is made to establish consistent and reliable time series for all major animal categories and subcategories for the time period 1990-2010. These newly generated time series shall form the common basis of actual and future assessments in the context of livestock husbandry in Switzerland.

## 2. Introduction

The assessment of livestock population data in Switzerland is based on a number of different data collection procedures. The different assessment methods may be based on different methodologies and may use different livestock category definitions and disaggregations. Furthermore, different surveys may also differ in the degree of coverage of agricultural enterprises. Decisive for the in- or exclusion of farms may be the agricultural area, the presence of livestock, net production, the employment level or a combination of these criteria.

From 1866 until the end of the 20<sup>th</sup> century the Swiss Federal Statistical Office (SFSO) conducted the *Eidgenössische Viehzählung* (Federal Livestock Census). The last *Viehzählung* took place in 1993 and the program was then abandoned. Since 1905 the SFSO also conducts the *Landwirtschaftszählung* or *Landwirtschaftliche Betriebszählung (BZ S1)*, every three to five years. The BZ S1 is a comprehensive survey that incorporates all workplaces and employees of the primary economic sector. Since 1997 this survey is coordinated with the so called *Landwirtschaftliche Betriebsstrukturerhebung*. This new census program partly substitutes the *Landwirtschaftliche Betriebszählung* and is also conducted by the SFSO. It is coordinated with the Federal Office for Agriculture and the Cantonal Departments of Agriculture. Its basic population includes all agricultural farms which together generate at least 99 % of the overall agricultural production. Generally, for a farm to be included the following minimal standards are applied:

- 1 ha agricultural productive area;
- 0.3 ha specialized-crop (*Spezialkulturen*) (e.g. vines, orchards, berries, vegetables);
- 0.1 ha cultivation under protection (greenhouse, tunnel);
- 8 breeding sows;
- 80 fattening pigs;
- 80 fattening pig places;
- 300 poultry.

The *Landwirtschaftliche Betriebsstrukturerhebung* is mainly based on administrative data collected by the Cantonal Departments of Agriculture. This data serves as basis for the implementation of the agricultural policy and the evaluation of the entitlement for agricultural subsidies. Enterprises without agricultural subsidies are separately covered by an independent sampling in the course of the BZ S1.

Livestock data used for the national statistics are generally available on a yearly basis and refer to the population on a reference date that is usually at the beginning of May. However, the exact number of livestock animals may vary during the year. Seasonal fluctuation of the cattle population has been analyzed for the years 2005-2007 based on detailed information from the Swiss Farmers Union (SBV 2007). Fluctuations during the analysed years are usually in the order of  $\pm 3\%$  with census data always slightly above the annual mean.

Between 1998 and 1999 the questionnaire for the collection of livestock data for the agricultural census was modified. Basically for all livestock categories a new classification scheme was applied. However, the alterations are mainly restricted to a regrouping of animal sub-categories. Consequently, assessment of total animal numbers per species on an aggregated level should not have been affected. While the average absolute trend for the years 1990–2009 over all animal categories excluding mature non dairy cattle was 3.3%, the average absolute trend for the years 1998-1999 was 3.8%.

In 2005 the Swiss Federal Veterinary Office (FVO) established a new framework for animal stock and traffic controls in order to prevent and combat eventual animal pests (FVO 2009). The respective regulations are defined in the “Decree on the Animal Traffic Database” from November 23<sup>rd</sup> 2005 (The Federal Authorities of the Swiss Confederation 2005). The basis of the “Animal Traffic Control” system is the registration of all farms and similar establishments where animals such as cattle, sheep, goats or swine (*Klauentiere*) are kept. Owners have to carry out stock controls and mark and identify their animals. Every cattle animal (and

some other animals that are used for breeding) is provided with an individual ear mark that allows its monitoring from birth till slaughter. Since 2009 data of cattle livestock is exclusively collected by this “Animal Traffic Database” (*Tierverkehrsdatenbank*, TVD) that is updated continuously and published monthly by Identitas AG (TVD 2009). At present, the database also comprehends owners of other animals such as sheep, goats and pigs (*Klauentiere: Rinder, Schafe, Ziegen, Schweine*). It is planned to extend the animal traffic database to include detailed data of other livestock in the near future. In order to prevent redundancy, all data contained in the database is no more collected during the censuses of the SFSO.

In Switzerland scientifically data on animal characteristics (weight, feed intake, nitrogen-excretion, methane emission etc.) is mainly available from the “Principles of fertilization in crop and feed production” (Flisch et al. 2009). Accordingly, for the purpose of estimating data such as animal nitrogen excretion or greenhouse gas emissions, all livestock animals have to be grouped according to the respective categories and subcategories. This category conversion was revised during a joint effort of the Agroscope Reckenholz Tänikon Research Station (ART, responsible for the elaboration of the “Principles of fertilization in crop and feed production”) and the School for Agricultural, Forest and Food Sciences (HAFL, former Swiss College of Agriculture (SHL)) in 2011. Different sources mainly from the Swiss Federal Statistical Office (SFSO) and the Swiss Farmers Union (SFU/SBV) have been consulted for this purpose. More details will be presented in the following category specific chapters.

For some animal categories characteristics such as nutrient excretions or feed intakes are expressed as excretion or intake per animal place. This has basically two implications. First, the yearly excretion or intake rate accounts for animal rotation when the length of stay of an animal in a specific (sub-) category is less than a year (e.g. yearly nitrogen excretion per fattening pig place lies between 12 and 17 kg N which corresponds to the nitrogen excretion of 3-3.2 fattening pigs raised from 25 to 100 kg (Flisch et al. 2009)). Second, an animal place may combine several animal sub-categories and consequently merge the respective nutrient excretions or feed intakes (e.g. the N-excretion of a goat-places includes all nitrogen excreted by a mother goat, all corresponding young and replacement animals as well as the nitrogen excreted by the corresponding share of male goats (Flisch et al. 2009)). Due to this combination the sum of all animal places within an animal category may not be equal to the total number of animals. Specifically, this is the case for sheep, goats and pigs.

### 3. Cattle

Since 1993 assessment of the number of cattle animals in Switzerland is mainly based on the *landwirtschaftliche Betriebszählung* and in later years on the *Landwirtschaftliche Betriebsstrukturerhebung*. For 1994 no data is available and the respective values are thus calculated as the mean between 1993 and 1995.

**Mature non dairy cattle (suckler cows) and pre-weaned calves:** Before the modification of the questionnaire for the collection of livestock data between 1998 and 1999 the number of mature non dairy cattle (suckler cows) and the number of pre-weaned calves was not assessed separately. In the statistics of the SFSO the respective animals were included under mature dairy cattle and fattening calves respectively. Consequently, the number of mature non dairy cattle (suckler cows) before 1999 had to be estimated independently according to personal communications with representatives of the Swiss Beef Cattle Association (*Mutterkuh Schweiz*). The number of pre-weaned calves was estimated at 0.8 times the number of mature non dairy cattle (suckler cows). The animals were subtracted from the categories mature dairy cattle and fattening calves respectively.

From 2009 onward cattle livestock data is exclusively assessed in the animal traffic database (TVD). Since the animal traffic database features only data of birth, translocation and death of the animals and does not include information on the animal's usage (breeding, fattening) the allocation to the categories of the "Principles of fertilization in crop and feed production" (Flisch et al. 2009) had to be specified independently. This has been done at the Swiss College of Agriculture (SHL) based on the distribution of the respective animal categories between the years 2000 and 2008 (SHL 2010). For 2007 and 2008 data was available both for the official censuses from the Swiss Federal Statistical Office (SFSO) and the animal traffic database. This permits a comparison between the detailed animal population distribution according to the census and the estimated population distribution according to SHL (2010). The total number of cattle in the animal traffic database is slightly higher than the traditional census data from the SFSO. However, the number of mature dairy cows and mature non-dairy cows is nearly identical or slightly lower with the new assessment method. The later is considered more robust. The highest differences occur for breeding cattle populations that tend to be slightly higher with the TVD data. Considering the overall problem of cattle livestock statistics a process has been initiated in 2011 in order to harmonize the respective data integrating all involved authorities.

## 4. Sheep

The assessment of the number of sheep is mainly based on the *landwirtschaftliche Betriebszählung* and in later years on the *Landwirtschaftliche Betriebsstrukturerhebung*. For 1994 no data is available and the respective values are thus calculated as the mean between 1993 and 1995. The sheep population is divided in two subcategories, namely milk-sheep-places and fattening-sheep-places.

**Fattening-sheep-place:** A fattening-sheep-place is defined as one ewe including animals reared for replacement (*Remontierung von Zuchttieren*), other corresponding young animals used for fattening and the corresponding share of rams. As described above, this implies that e.g. the amount of nitrogen excreted on one fattening-sheep-place or the amount of feed ingested per fattening-sheep place corresponds to the amount excreted or ingested by all the before mentioned animals. However, the number of fattening-sheep-places corresponds to the number of ewes. The corresponding categories in the statistics of the SFSO are *weibliche Zuchtschafe über 1 Jahr* for 1990-1998 and *andere weibliche Schafe über 1 Jahr* for 1999 onward (code 1353).

**Milk-sheep-places:** A milk-sheep-place is defined as one milk-sheep (mother-sheep) including animals reared for replacement (*Remontierung*), other corresponding young animals used for fattening and the corresponding share of rams. As for fattening sheep places, excretion and intake rates encompass all the before mentioned animals. However, the number of milk-sheep-places corresponds to the number of milk-sheep (code 1351). Before 1999 data for milk-sheep is available only sporadically. For the years 1990, 1996, 1997 and 1998 numbers are based on published data from the SFSO. Data between 1990 and 1996 have been estimated by linear interpolation.

**Total sheep:** The total number of sheep (code 1399) includes all subcategories, i.e. lambs up to 6 month (*Lämmer bis 6 Monate*), young sheep and rams from 6 to 12 months (*Jungschafe und –widder 6-12 Monate*), breeding rams older than 1 year (*Zuchtwidder über 1 Jahr*) as well as ewes (*andere weibliche Schafe über 1 Jahr*) and milk-sheep (*Milchschafe / Schafe gemolken*). As the sheep-places combine adult female sheep with their respective young and replacement animals as well as the rams, the total number of sheep does not equal the sum of the fattening-sheep-places and milk-sheep-places.

## 5. Goats

The assessment of the number of goats is mainly based on the *landwirtschaftliche Betriebszählung* and in later years on the *Landwirtschaftliche Betriebsstrukturerhebung*. For 1994 no data is available and the respective values are thus calculated as the mean between 1993 and 1995. With exception of the year 1994, all data for goats is available from the data compilations of the Swiss Farmers Union (SBV 2011).

**Goat-places:** A goat-place is defined as one mother-goat including animals reared for replacement (*Remontierung von Zuchtieren*), other corresponding young animals used for fattening and the corresponding share of male goats. As for sheep places, excretion and intake rates of one goat-place comprise all the before mentioned animals. However, the number of goat-places corresponds to the number of non pregnant young goats  $\frac{1}{2}$  -  $1\frac{1}{2}$  years (*nichtträchtige Jungziegen  $\frac{1}{2}$  -  $1\frac{1}{2}$  Jahre = Jungziegen von  $\frac{1}{2}$  -  $1\frac{1}{2}$  Jahre*) plus the number of pregnant young goats, milk-goats and other goats over  $1\frac{1}{2}$  years (*trächtige Jungziegen, Milchziegen und andere Ziegen über  $1\frac{1}{2}$  Jahre = Ziegen über  $1\frac{1}{2}$  Jahre*) for the years 1990-1998. From 1999 onward the number of goat-places corresponds to the number of milk-goats (*Milchziegen = Ziegen gemolken*, code 1461) plus the number of other female goats over 1 year (*andere weibliche Ziegen über 1 Jahr*, code 1463).

**Total goats:** The total number of goats (code 1499) includes all subcategories, i.e. young goats under  $\frac{1}{2}$  years (*Gitzi und Jungziegen bis  $\frac{1}{2}$  Jahr*), non pregnant young goats  $\frac{1}{2}$  -  $1\frac{1}{2}$  years (*nichtträchtige Jungziegen  $\frac{1}{2}$  -  $1\frac{1}{2}$  Jahre = Jungziegen von  $\frac{1}{2}$  -  $1\frac{1}{2}$  Jahre*), pregnant young goats, milk-goats and other goats over  $1\frac{1}{2}$  years (*trächtige Jungziegen, Milchziegen und andere Ziegen über  $1\frac{1}{2}$  Jahre = Ziegen über  $1\frac{1}{2}$  Jahre*) as well as male goats over  $\frac{1}{2}$  years (*Ziegenböcke über  $\frac{1}{2}$  Jahre*) for 1990-1998. From 1999 onward the total number of goats (code 1499) includes young goats under 1 years (*Gitzi und Jungziegen bis 1 Jahr*), milk-goats (*Milchziegen = Ziegen gemolken*), other female goats over 1 year (*andere weibliche Ziegen über 1 Jahr*) as well as male goats over 1 years (*Ziegenböcke über 1 Jahre*). As the goat-places combine adult female goats with their respective young and replacement animals as well as the male goats, the total number of goats is considerably higher than the number of the goat-places.

## 6. Horses, Mules and Asses

**Non agricultural horses, mules and asses:** The assessment of the number of horses, mules and asses is mainly based on the *landwirtschaftliche Betriebszählung* and in later years on the *Landwirtschaftliche Betriebsstrukturerhebung*. However, a considerable share of horses, mules and asses is held in non agricultural enterprises and escapes therefore these agricultural censuses. Poncet et al. (2007) estimated this share for the years 1988 (50.8%), 1993 (36.4%) and 2005 (15%). For the year 2008 Poncet et al. (2009) estimated the respective share as 13%. For all years in between the share of non agricultural horses, mules and asses has been interpolated and for the years beyond 2008 a constant share of 13% has been assumed. Accordingly the data from the census statistics has been corrected for the unaccounted horses, mules and asses.

**1990-1993:** For the last Federal Livestock Census (*Eidgenössische Viehzählung*) in 1993 the number of horses <3 years, horses >3 years, as well as the number of mules and asses is known. Those numbers include both animals held in agricultural and non agricultural enterprises. For 1988 the totals of the respective categories (horses; mules and asses) is given in Poncet et al. (2007). This total has been distributed to the subcategories (horses <3 years and horses >3 years respectively mules and asses) according to the distribution in the year 1993. Thereafter, the respective values for the years 1990-1992 have been estimated by linear interpolation. Subsequently all numbers for 1990-1993 have been distributed to agricultural and non agricultural use according to the respective shares described above (Poncet et al. 2007, 2009).

**1995 onward:** From 1995 onward the numbers of agricultural horses and mules and asses is available on a disaggregated level from the SBV and the SFSO. The amount of non agricultural horses and mules and asses is estimated according to the respective shares described above (Poncet et al. 2007, 2009).

**1994:** For 1994 no data was available. Subsequently, the numbers have been estimated by building the mean value between 1993 and 1995 of the animals held on agricultural enterprises and then estimating the share of animals outside the agricultural sector according to the method described above (Poncet et al. 2007, 2009).

This whole process might seem rather complex and it is therefore recommended to reconstruct the procedure in the respective excel-file (Table Annex II.xlsx).

## 7. Swine

The assessment of the number of swine is mainly based on the *landwirtschaftliche Betriebszählung* and in later years on the *Landwirtschaftliche Betriebsstrukturerhebung*. For 1994 no data is available and the respective values are thus calculated as the mean between 1993 and 1995. With exception of the year 1994, all data for swine is available from the data compilations of the Swiss Farmers Union (SBV 2011) or the SFSO. Data before 1999 was assessed with a different disaggregation and consequently had to be corrected as described below. Data after 1999 is readily available in the required categorization from SFU/SBV and SFSO.

**Piglets:** Before 1999 the category weaned piglets (*abgesetzte (andere) Ferkel*) encompassed animals up to the weight of 30 kg, while from 1999 onward the respective weight limit was 25 kg. Consequently the numbers before 1999 were corrected by subtraction of 1/6 of the population.

**Fattening pigs over 25 kg:** Before 1999 the category fattening pigs contained animals with a weight of 30 - 100 kg while the piglets categories (weaned and pre-weaned piglets) encompassed animals up to the weight of 30 kg. From 1999 onward the weight limit between piglets and fattening pigs was changed to 25 kg. Consequently, the number of fattening pigs over 25 kg before 1999 was estimated as follows: Fattening pigs over 30 kg + pre-weaned piglets \* 1/6 + weaned piglets \* 1/6 + young sows. The number of young sows is only available for the years 1996-1998. For the years 1990-1995 the number of young sows was estimated based on the mean relation of young sows to adult sows (dry sows + nursing sows) of the years 1996-1998.

**Dry sows and nursing sows:** Before the year 1996 only the aggregated number of sows (dry sows + nursing sows + young sows) is reliably available. However, the ratio of nursing sows / (nursing sows + dry sows) is known for the years 1990 and 1996 from the statistics of the SFSO. For the years 1991-1995 this ratio was estimated by linear interpolation. Subsequently, the number of nursing sows and dry sows could be estimated based on this ratio. Care must be taken to subtract the number of young sows from the total number of sows (dry sows + nursing sows + young sows) before distributing the remaining sows (dry sows + nursing sows) to the respective categories. The number of young sows is estimated as explained under "fattening pigs over 25 kg" and are added to the respective category. For 1996 – 1998 the number of nursing sows is available from the SFSO. Dry sows are estimated by subtracting the number of nursing sows and young sows from the total number of sows (dry sows + nursing sows + young sows). Excretion and intake rates of pre weaned piglets are contained in the rates of the nursing sows.

**Boars:** The number of boars is readily available from the statistics of the SFSO and the SFU/SBV.

## 8. Poultry

The assessment of the number of poultry is mainly based on the *landwirtschaftliche Betriebszählung* and in later years on the *Landwirtschaftliche Betriebsstrukturerhebung*. For 1994 no data is available and the respective values are thus calculated as the mean between 1993 and 1995. With exception of the year 1994, data for growers, layers and broilers is available from the data compilations of the Swiss Farmers Union (SBV 2011) or the SFSO. Data for turkeys and other poultry is available from 1996 onward from the SFSO. Before 1996 data for turkeys and other poultry has been estimated as described below.

**Turkeys and other poultry:** Other poultry includes ducks, geese, ostriches, pheasants, partridges and quails. Disaggregated data on turkey and other poultry was available for 1990, 1996, 1997 and 1998. Based on these numbers the average ratio turkey / (turkeys + other poultry) has been calculated. This ratio has been used to distribute the aggregated number of turkeys + other poultry of the year 1993 on the two subcategories. Subsequently the numbers between 1990 and 1993 and between 1993 and 1996 have been estimated by linear interpolation.

## 9. Quality assurance, quality control (QA/QC), verification and time series consistency

The livestock population data presented here has been compared to FAO statistics. This has only been possible on an aggregated level, since FAOSTAT does not contain detailed data on a sub category level. In general all numbers are based on the same original data sources (Neuhaus 2007). Not surprisingly, differences between the recalculated data set presented here and the FAO data are rather small with a few exceptions that can be explained. In all cases the new recalculated data is considered more reliable than the FAO data. Basically for all numbers one possible explanation for differences is that the Swiss Farmers Union conducts data updates in subsequent years of first publication. The FAO database does not necessarily account for these updates. Consequently small differences in the order of  $\pm 2\%$  may occur. Furthermore, for most animal categories there are disparities for the years 1994-1996. The data basis for these years is generally weak and differences may be due to different modes of interpolation. For horses, mules and asses disagreements are due to the different accounting of agricultural and non agricultural animals. The Swiss inventory systems accounts for all animals no matter whether they are held on agricultural or non agricultural enterprises. Moreover, animal numbers in the category mules and asses are in average 70% higher than the respective FAO numbers because the compilation presented here additionally encompasses ponies and lesser horses. The total number of poultry also shows some minor discrepancies due to different accounting for turkeys, ducks, geese, ostriches, pheasants, partridges and quails.

The new recalculated data presented here has been compared to the data available on the STAT-TAB web access platform from the Swiss Federal Statistical Office (SFSO 2012). Accordance is very good with very few differences that can be readily explained in most cases. Some discrepancies for the year 1990 remain unexplained. No adjustments have been made for these numbers because the overall effect would be rather small and time series consistency might be jeopardized by adopting the STAT-TAB data.

Time series are generally considered to be consistent with two points that should be considered. First, between 1998 and 1999 the questionnaire for the collection of livestock data was modified. In some animal categories this led to minor ruptures in the time series. However, on an aggregated level the average absolute trend over all animal categories (excluding mature non-dairy cattle) for the years 1998-1999 (3.8%) was very close to the mean of the average absolute trend for the years 1990-2010 (3.3%). For some animal sub categories the effect may be more significant. However, usually this concerns shifts of animals within subcategories with very similar properties. Hence, the overall effect for emission inventories and balances is considered negligible. Second, for 2009 and 2010 cattle population statistics were not available from the censuses of the SFSO (*landwirtschaftliche Betriebszählung, Landwirtschaftliche Betriebsstrukturerhebung*). Data for 2009 and 2010 is based on the animal traffic database. Aggregation has been adapted to the required format by the Swiss College of Agriculture SHL (SHL 2010).

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## Annex 1

**Table A1:** Overview on the livestock categorization in Switzerland 1990-1998 and after 1999/2000-2008 according to the Swiss Farmers Union (SFU / SBV) and the Swiss Federal Statistical Office (SFSO).

	1990-1998	1999/2000-2008	Code
<b>Cattle</b>			
Fattening Calves	<i>Kälber bis 1/2 Jahr, zur Mast, weiblich/männlich</i>	<i>Mastkälber</i>	1171
Pre-Weaned Calves		<i>Kälber von Mutter- und Ammenkühen, unter 1-jährig</i>	1156
Breeding Calves	<i>Kälber bis 1/2 Jahr, zur Aufzucht, weiblich</i>	<i>Aufzuchtkälber unter 4 Monate alt, weiblich</i>	1136
	<i>Kälber bis 1/2 Jahr, zur Aufzucht, männlich</i>	<i>Aufzuchtkälber unter 4 Monate alt, männlich</i>	1137
Breeding Cattle (4-12 months)	<i>Jungvieh von 1/2 bis 1 Jahr, zur Aufzucht, weiblich</i>	<i>Jungvieh zur Zucht, 4 bis 12 Monate alt, weiblich</i>	1131
	<i>Jungvieh von 1/2 bis 1 Jahr, zur Aufzucht, männlich</i>	<i>Jungvieh zur Zucht, 4 bis 12 Monate alt, männlich</i>	1132
Breeding Cattle 2nd Year	<i>Rinder, von 1 bis 2 Jahren, zur Zucht</i>	<i>Rinder 1- bis 2-jährig</i>	1122
	<i>Stiere, von 1 bis 2 Jahren, zur Zucht</i>	<i>Stiere 1- bis 2-jährig</i>	1127
Breeding Cattle 3rd Year	<i>Rinder, von über 2 Jahren, zur Zucht</i>	<i>Rinder über 2-jährig</i>	1121
	<i>Stiere, von über 2 Jahren, zur Zucht</i>	<i>Stiere über 2-jährig</i>	1126
Fattening Calves (0-4 months)	<i>Kälber bis 1/2 Jahr, zur Grossviehmast, weiblich</i>	<i>Kälber zur Grossviehmast unter 4 Monate alt</i>	1163
	<i>Kälber bis 1/2 Jahr, zur Grossviehmast, männlich</i>		
Fattening Cattle (4-12 months)	<i>Jungvieh von 1/2 bis 1 Jahr, zur Mast, weiblich</i>	<i>Rinder, Stiere und Ochsen (Grossviehmast) über 4 Monate alt</i>	1161
	<i>Jungvieh von 1/2 bis 1 Jahr, zur Mast, weiblich</i>		
	<i>Rinder, von 1 bis 2 Jahren, zur Mast</i>		
	<i>Rinder, von über 2 Jahren, zur Mast</i>		
	<i>Stiere, von 1 bis 2 Jahren, zur Mast</i>		
	<i>Stiere, von über 2 Jahren, zur Mast</i>		
	<i>Ochsen, von über 1 Jahr, zur Mast</i>		

	1990-1998	1999/2000-2008	Code
Mature Dairy Cattle	Kühe	<i>Kühe zur Verkehrsmilchproduktion</i>	1111
		<i>Kühe, gemolken, keine Verkehrsmilchproduktion</i>	1112
		<i>Galchkühe</i>	1116
		<i>Ausmastkühe</i>	1117
Mature Non-Dairy Cattle		<i>Mutter- und Ammenkühe (ohne Kälber)</i>	1151
Total cattle			1199
<b>Sheep</b>			
	<i>Lämmer bis 6 Monate</i>	<i>Weidelämmermast</i>	1359
	<i>Jungschafe und –widder 6-12 Monate</i>	<i>Jungschafe und –widder bis 1 Jahr</i>	1357
	<i>Zuchtwidder über 1 Jahr</i>	<i>Zuchtwidder über 1 Jahr</i>	1355
Fattening-sheep-place	<i>weibliche Zuchtschafe über 1 Jahr</i>	<i>andere weibliche Schafe über 1 Jahr</i>	1353
	<i>andere Schafe über 1 Jahr (SBV: inkl. Milchschafe)</i>		
Milk-sheep-place	<i>Milchschafe / Schafe gemolken</i>	<i>Milchschafe / Schafe gemolken</i>	1351
Total Sheep	Total Schafe		1399
<b>Goats</b>			
	<i>Gitzi und Jungziegen bis ½ Jahr</i>	<i>(Gitzi und) Jungziegen bis 1 Jahr</i>	1467
Goat place	<i>nichtträchtige Jungziegen ½ - 1½ Jahre / Jungziegen von ½ - 1½ Jahre</i>	<i>andere weibliche Ziegen über 1 Jahr</i>	1463
	<i>trächtige Jungziegen, Milchziegen und andere Ziegen über 1½ Jahre / Ziegen über 1½ Jahre</i>	<i>Milchziegen / Ziegen gemolken</i>	1461
	<i>Ziegenböcke über ½ Jahre</i>	<i>Ziegenböcke über 1 Jahre</i>	1465
		<i>Zwergziegen</i>	1469 / 1885
Total Goats	Total Ziegen		1499
<b>Horses</b>			
Horses <3 years	<i>Saugfohlen</i>	<i>Fohlen bei Fuss</i>	2212
	<i>Fohlen 1 jährig</i>	<i>Andere Fohlen unter 3 jährig</i>	2221
	<i>Fohlen 2 jährig</i>		
Horses >3 years	<i>Fohlen / Pferde 3 jährig</i>	<i>(Andere) Pferde über 3 jährig</i>	2215
	<i>Pferde ab 4 Jahren</i>		
	<i>Zuchthengste</i>		
	<i>Zuchtstuten</i>	<i>Säugende Stuten</i>	2211

	1990-1998	1999/2000-2008	Code
<b>Mules and Asses</b>			
Asses	<i>Ponies und Kleinpferde</i>	<i>Ponys und Kleinpferde jeden Alters</i>	1234
	<i>Esel</i>	<i>Esel jeden Alters</i>	1237
Mules	<i>Maultiere und Maulesel</i>	<i>Maultiere und Maulesel jeden Alters</i>	1231
<b>Swine</b>			
	<i>Ferkel bis 30 kg, saugende</i>	<i>Saugferkel</i>	1635
Piglets	<i>Ferkel bis 30 kg, andere</i>	<i>Abgesetzte Ferkel</i>	1631
Fattening Pig over 25 kg	<i>Jager (Schweine) von 31-50 kg</i>	<i>Remonten bis 6 Monate alt und Mastschweine</i>	1639
	<i>Schweine von 51-80 kg</i>		
	<i>Mastschweine von über 80 kg</i>		
	<i>Mutterschweine nicht tragende Jungsauen</i>		
Nursing sows	<i>Mutterschweine nicht tragende säugende</i>	<i>Säugende Zuchtsauen</i>	1611
Dry sows	<i>Mutterschweine nicht tragende andere</i>	<i>Nicht säugende Zuchtsauen über 6 Monate alt</i>	1615
	<i>Mutterschweine tragende zum ersten mal</i>		
	<i>Mutterschweine tragende andere</i>		
Boars	<i>Zuchteber</i>	<i>Zuchteber</i>	1621
Total swine	Total Schweine		1699
<b>Poultry</b>			
Growers	<i>Legetierküken und Junghennen</i>	<i>Junghennen, Junghähne und Küken (ohne Mastpoulets)</i>	1755
Layers	<i>Zuchthähne</i>	<i>Zuchthennen und -hähne (Lege- und Mastlinien)</i>	1751
	<i>Lege- und Zuchthennen</i>	<i>Legehennen</i>	1753
Broilers	<i>Mastpoulets</i>	<i>Mastpoulets jeden Alters</i>	1757
Turkey	<i>Truten</i>	<i>Truten jeden Alters</i>	1761
		<i>Truten Vormast</i>	1762
		<i>Truten Ausmast</i>	1763
Other poultry	<i>Enten</i>	<i>Enten (ohne Zierenten)</i>	1871
	<i>Gänse</i>	<i>Gänse</i>	1872
	<i>Strausse</i>	<i>Strausse</i>	1875
		<i>Strausse bis 13 Monate alt</i>	1877
		<i>Strausse über 13 Monate alt</i>	1878
	<i>Übriges Geflügel</i>	<i>Fasane</i>	1873
		<i>Rebhühner</i>	1874
<i>Wachteln</i>		1876	

## Annex 2

**Table A2:** Livestock populations in Switzerland 1990-2010.

Category	Sub Category	Unit	1990	1991	1992	1993	1994	1995	1996	1997	1998	
Cattle	Calves	Fattening Calves	places	112300	111400	109500	111099	106393	101686	112017	106025	108092
		Pre-Weaned Calves	head	9600	11200	13600	14400	16000	18400	22400	25600	28800
	Breeding	Breeding Calves	head	214400	203600	197100	183634	174659	165683	155382	138961	135738
		Breeding Cattle (4-12 months)	head	132000	133100	126900	124564	126810	129055	130675	121145	117789
		Breeding Cattle 1st Year	head	346400	336700	324000	308198	301469	294738	286057	260106	253527
		Breeding Cattle 2nd Year	head	253300	251900	250500	238718	238641	238564	243033	232873	217351
		Breeding Cattle 3rd Year	head	150700	148400	146700	142251	140804	139357	139874	139312	132668
	Fattening	Breeding Cattle (> 1 year)	head	404000	400300	397200	380969	379445	377921	382907	372185	350019
		Fattening Calves (0-4 months)	head	88200	78600	71200	75706	79051	82396	74672	68362	65783
		Fattening Cattle (4-12 months)	head	99600	96200	86600	92265	101379	110492	104975	97039	97307
	Young Cattle	Fattening Cattle	places	187800	174800	157800	167971	180430	192888	179647	165401	163090
		<b>Young Cattle</b>	<b>head</b>	<b>1'060'100</b>	<b>1'034'400</b>	<b>1'002'100</b>	<b>982'637</b>	<b>983'737</b>	<b>985'633</b>	<b>983'028</b>	<b>929'317</b>	<b>903'528</b>
	Cows	Mature Dairy Cattle	head	783'100	780'500	763'500	744'450	742'046	739'641	736'043	711'613	701'343
Mature Non-Dairy Cattle		head	12'000	14'000	17'000	18'000	20'000	23'000	28'000	32'000	36'000	
<b>Total Cattle</b>		<b>head</b>	<b>1855200</b>	<b>1828900</b>	<b>1782600</b>	<b>1745087</b>	<b>1745783</b>	<b>1748274</b>	<b>1747071</b>	<b>1672930</b>	<b>1640871</b>	
Sheep	Fattening Sheep	places	190600	200800	201000	211084	201233	191382	207569	207981	208676	
	Milksheep	places	4265	4017	3768	3520	3271	3023	2774	3074	4379	
	<b>Total Sheep</b>	<b>head</b>	<b>395'200</b>	<b>409'400</b>	<b>414'700</b>	<b>424'027</b>	<b>405'387</b>	<b>386'747</b>	<b>418'576</b>	<b>420'350</b>	<b>422'270</b>	
Goats	Goat Places	places	44800	43100	38400	37292	35949	34606	37063	37742	39753	
	<b>Total Goats</b>	<b>head</b>	<b>68'300</b>	<b>65'200</b>	<b>58'200</b>	<b>56'687</b>	<b>54'946</b>	<b>53'204</b>	<b>56'846</b>	<b>57'966</b>	<b>60'106</b>	
Horses	Horses <3 years, Agr.	head	6070	6513	6969	7437	9221	11005	10711	9962	9995	
	Horses >3 years, Agr.	head	22092	23706	25365	27070	28717	30364	32310	35837	36302	
	<b>Total Horses, Agr.</b>	<b>head</b>	<b>28'161</b>	<b>30'219</b>	<b>32'334</b>	<b>34'507</b>	<b>37'938</b>	<b>41'369</b>	<b>43'021</b>	<b>45'799</b>	<b>46'297</b>	
	Horses <3 years, Non-Agr.	head	4970	4745	4507	4257	4882	5380	4823	4122	3788	
	Horses >3 years, Non-Agr.	head	18091	17271	16405	15493	15204	14843	14550	14828	13758	
<b>Total Horses, Non-Agr.</b>	<b>head</b>	<b>23'061</b>	<b>22'016</b>	<b>20'912</b>	<b>19'750</b>	<b>20'086</b>	<b>20'223</b>	<b>19'373</b>	<b>18'950</b>	<b>17'546</b>		
Mules and Asses	Mules and Asses, Agr.	head	156	167	179	191	239	287	322	374	351	
	Asses, Agr.	head	5723	6133	6554	6986	7128	7269	8142	9038	9589	
	<b>Total Mules and Asses, Agr.</b>	<b>head</b>	<b>5'879</b>	<b>6'301</b>	<b>6'733</b>	<b>7'177</b>	<b>7'367</b>	<b>7'556</b>	<b>8'464</b>	<b>9'412</b>	<b>9'940</b>	
	Mules and Asses, Non-Agr.	head	128	122	116	109	127	140	145	155	133	
	Asses, Non-Agr.	head	4687	4468	4239	3999	3774	3553	3667	3740	3634	
<b>Total Mules and Asses, Non-Agr.</b>	<b>head</b>	<b>4'815</b>	<b>4'590</b>	<b>4'355</b>	<b>4'108</b>	<b>3'900</b>	<b>3'694</b>	<b>3'812</b>	<b>3'894</b>	<b>3'767</b>		
Swine	Fattening	places	299417	282500	290750	299589	287173	274756	240865	252225	261765	
	Fattening Pig over 25 kg	places	1024627	989594	972816	943023	855465	767906	778690	779603	837399	
	Breeding	places	129256	125959	124899	125275	117081	108886	98832	104340	110851	
	Dry Sows	places	37384	36780	36818	37280	35148	33015	30247	29934	31350	
	Nursing Sows	places	8400	8100	8000	8248	7680	7112	6253	6379	6420	
<b>Total Swine</b>	<b>head</b>	<b>1'787'000</b>	<b>1'722'600</b>	<b>1'705'700</b>	<b>1'691'781</b>	<b>1568'703</b>	<b>1'445'624</b>	<b>1'379'359</b>	<b>1'394'913</b>	<b>1'486'955</b>		
Poultry	Chicken	places	718900	664200	709600	719214	716831	714448	732128	732854	793496	
	Layers	places	3083000	2645400	2535800	2517593	2317921	2118248	2226019	2277518	2270137	
	Broilers	places	2019900	2198600	2095500	2990216	3110587	3230958	3293197	3341987	3502338	
	Other Poultry	places	94651	117366	140082	162797	166474	170150	173827	184392	157764	
	Other Poultry	places	21778	21191	20605	20018	18439	16859	15280	15772	15861	
<b>Total Poultry</b>	<b>head</b>	<b>5'938'229</b>	<b>5'646'758</b>	<b>5'501'586</b>	<b>6'409'838</b>	<b>6'330'251</b>	<b>6'250'664</b>	<b>6'440'451</b>	<b>6'552'523</b>	<b>6'739'596</b>		

Swiss Farmers Union (e.g. SBV 2011)  
 Swiss Federal Statistical Office (e.g. SFSO 2012)  
 Estimated (linear interpolation, extrapolation, estimates based on development of other categorie etc.)  
 Estimated (sum)  
 Estimated (based on Poncet et al. 2007 / Poncet et al. 2009)  
 Mutterkuh Schweiz (personal communication)  
 SHL 2010 (T. Kupper)

Table A2 (cont.): Livestock populations in Switzerland 1990-2010.

Category	Sub Category	Unit	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
Cattle	Calves	Fattening Calves	places	116388	103252	114741	114405	113905	111303	105566	101200	100476	95019	100527	99446
		Pre-Weaned Calves	head	33179	35661	40391	46925	52303	56647	62492	67300	72166	76051	85792	88095
	Breeding	Breeding Calves	head	71750	75521	77920	75826	73232	71171	75333	76700	75833	80456	76753	76959
		Breeding Cattle (4-12 months)	head	146930	160520	160136	153688	146536	143482	146690	146500	147428	151945	148993	149392
		Breeding Cattle 1st Year	head	218680	236041	238056	229514	219768	214653	222023	223200	223261	232401	225746	226352
		Breeding Cattle 2nd Year	head	187547	221864	219281	219092	212710	205397	204655	210200	210491	212697	212209	212778
		Breeding Cattle 3rd Year	head	117935	129767	130368	126028	123961	120865	113286	110100	109072	109639	118846	119163
		Breeding Cattle (> 1 year)	head	305482	351631	349649	345120	336671	326262	317941	320300	319563	322336	331055	331941
	Fattening	Fattening Calves (0-4 months)	head	47752	42621	39572	38176	38807	35823	35312	35300	33874	35818	34830	34464
		Fattening Cattle (4-12 months)	head	162476	104507	108908	103530	105292	108862	112180	114100	114084	115787	111793	110620
		Fattening Cattle	places	210228	147128	148480	141706	144099	144685	147492	149400	147958	151605	146623	145084
	Young Cattle	Young Cattle	head	883'957	873'713	891'317	877'670	866'746	853'550	855'514	861'400	863'424	877'412	889'743	890'918
Cows	Mature Dairy Cattle	head	683'545	669'410	669'410	657'924	638'288	621'008	620'708	618'100	614'795	628'516	599'361	589'024	
	Mature Non-Dairy Cattle	head	41'233	44'882	50'624	58'103	65'144	69'989	78'474	87'300	93'545	98'359	108'381	111'291	
Total Cattle	Total Cattle	head	1608735	1588005	1611351	1593697	1570178	1544547	1554696	1566800	1571764	1604287	1597485	1591233	
Sheep	Fattening Sheep	Fattening Sheep	places	221743	216646	216588	219877	228589	227499	229392	230600	229985	229396	227346	228178
	Milksheep	Milksheep	places	5769	6731	6950	7159	7988	8149	8881	13000	10212	10719	11712	12362
	Total Sheep	Total Sheep	head	423'521	420'740	419'995	429'503	444'811	440'522	446'350	450'900	443'584	446'153	431'889	434'083
Goats	Goat Places	Goat Places	places	40750	41405	42133	43003	44926	46215	48474	50600	51878	53422	54303	54739
	Total Goats	Total Goats	head	61'566	62'499	63'034	65'950	67'412	70'627	73'970	76'300	79'081	81'445	81'185	82'842
Horses	Horses <3 years, Agr.	Horses <3 years, Agr.	head	10966	10133	9715	9527	9364	9357	9500	9642	9603	9023	8672	
	Horses >3 years, Agr.	Horses >3 years, Agr.	head	37543	40214	40401	41709	43308	44323	45769	46900	48078	49366	51133	53441
	Total Horses, Agr.	Total Horses, Agr.	head	48'909	50'347	50'116	51'236	52'672	53'701	55'126	56'400	57'720	58'969	60'156	62'113
	Horses <3 years, Non-Agr.	Horses <3 years, Non-Agr.	head	3793	3185	2761	2434	2135	1891	1651	1589	1526	1435	1348	1296
	Horses >3 years, Non-Agr.	Horses >3 years, Non-Agr.	head	12986	12641	11484	10656	9874	8939	8077	7847	7611	7377	7641	7985
	Total Horses, Non-Agr.	Total Horses, Non-Agr.	head	16'779	15'826	14'245	13'090	12'009	10'831	9'728	9'437	9'137	8'811	8'989	9'281
Mules and Asses	Mules and Asses, Agr.	Mules, Agr.	head	439	391	438	456	507	486	501	546	488	460	815	966
		Asses, Agr.	head	10852	11417	12027	12753	13598	14360	15457	15932	16673	17348	18374	19441
	Total Mules and Asses, Agr.	Total Mules and Asses, Agr.	head	11'291	11'808	12'465	13'209	14'105	14'846	15'958	16'478	17'161	17'808	19'189	20'407
	Mules and Asses, Non-Agr.	Mules, Non-Agr.	head	152	123	125	117	116	98	88	91	77	69	122	144
	Asses, Non-Agr.	head	3754	3589	3419	3258	3100	2896	2728	2666	2639	2592	2746	2905	
Total Mules and Asses, Non-Agr.	Total Mules and Asses, Non-Agr.	head	3'906	3'712	3'543	3'375	3'216	2'994	2'816	2'757	2'717	2'661	2'967	3'049	
Swine	Fattening	Piglets	places	281003	296628	318751	326586	322842	327760	337582	366500	344754	336148	338392	350908
		Fattening Pig over 25 kg	places	734382	750869	762514	767887	751679	753227	796720	786100	766890	763233	779475	788149
	Breeding	Dry Sows	places	101233	104783	107984	108582	105268	107901	112741	115200	105680	105396	104726	106070
		Nursing Sows	places	34993	36665	37524	36499	35848	35276	36049	36500	34876	32612	33087	33508
		Boars	head	6174	6248	6084	5784	5278	5166	5055	4900	4170	3960	3833	3685
Total Swine	Total Swine	head	1'453'250	1'498'223	1'547'711	1'556'717	1'528'933	1'537'505	1'609'497	1'634'800	1'573'090	1'540'129	1'557'204	1'588'998	
Poultry	Chicken	Growers	places	760852	831663	745262	753918	808995	853080	867702	888400	901798	919008	966665	925522
		Layers	places	2222788	2150303	2069459	2154133	2117180	2088751	2188510	2147300	2197685	2254875	2318296	2438051
		Broilers	places	3747449	3807754	3993164	4298170	4518416	4970793	5060392	4481300	5002357	5300356	5456156	5580103
	Other Poultry	Turkey	places	154584	172582	123049	123905	133817	138762	132308	137135	112459	53809	52354	58074
		Other Poultry	places	21873	20681	8564	8490	8849	9302	11468	16141	14165	14738	15891	23153
Total Poultry	Total Poultry	head	6'907'546	6'982'983	6'939'498	7'338'616	7'587'257	8'060'688	8'260'380	7'670'276	8'228'464	8'542'786	8'809'362	9'024'903	

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