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Inventory of data on manure management

1. INTRODUCTION

Following the recommendation of the Task Force on Fertiliser Statistics, and the subsequent discussion in the Working Group on Agri-Environmental statistics in February 2012, Eurostat has carried out an inventory of existing data collection on manure management in the statistical offices and institutes, as well as other institutes such as those reporting to UNFCCC and the Nitrates Directive. More information on the inventory the [questionnaire](#) and the [annexes](#) is available at Circa. In the following chapters the results of this inventory are discussed as well as the proposed follow-up actions. The results and follow-up actions will also be discussed in the AEI Working Group in spring 2013.

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2. GENERAL RESULTS

- **High response**

We received in total 39 completed questionnaires from all EU-27 countries, CH and NO except CY.

- **Many countries already collect data on manure management, though for some countries SAPM is the only data source**

Table 1 shows an overview of data collection by topic and by country. Please note that in this table SAPM has **not** been taken into account, as all countries have carried out the SAPM. The discussed results in this chapter therefore refer to data collection by countries **additional** to the SAPM. In Table 1 a red cell means that no other data than SAPM is collected in the country for that topic.

Table 1 shows that in 11 countries the SAPM was actually the only source for information on manure management. In UK and BE additional information on manure management is collected but only for a part of the country. Table 1 however also shows that 15 countries already collect data on manure management independent from Commission efforts. A more detailed overview of data collection by country is provided in Annex 1.

- **More than 1/3 of the Member States, CH and NO collect data on manure storage, grazing and housing**

Data is collected on all topics covered by the inventory in DK, ES, FR, NL and CH, while BE (Flanders), UK (England) and DE collect data for most of the topics. From Table 1 it can be seen that 14 countries collect data on manure storage, 13 on grazing and housing, 9 on manure application and animal feeding and only 8 countries collect some data on manure treatment.

- **Data collection takes place annually or at regular intervals for the majority of countries**

Besides the coverage, Table 1 also shows large differences between countries in the frequency of data collection. In Flanders all the topics covered are collected at annual rate, while in FR all data is planned to be collected at regular intervals and in ES data is collected at an irregular base. More than half of the countries which collect data on grazing, animal feeding, manure treatment, and manure storage do it annually or at regular intervals, and more than 2/3 of these countries which collect data on housing and manure application do this annually or at regular intervals. In a third of the countries data collection is however irregular. NO commented that the irregularity of data collection (irregular surveys with different scope, classifications and level of details) is one of the "Achilles heels" of agri-environmental statistics.

Table 1. Data collection by country

	Grazing	Animal feeding	Housing	Manure treatment	Manure storage	Manure application
BE	a, 2012	a, 2000	a, 2008	a, 1997	a, 1992	
BG						
CZ			a, 2005		a, 2005	
DK	i	a, 1985	a, 1985	a, 1985	a, 1985	a, 1985
DE	i	i	a, 2002		i	
EE						
IE						
EL						
ES		i	i	i	i	i
FR	r, 5-6y, 2008	r, 5-6y, 2008	r, 5-6y, 2008	r, 5-6y, 2008	r, 5-6y, 2008	r, 5-6y, 2008
IT		√				
CY	?	?	?	?	?	?
LV			√			
LT						
LU						
HU						
MT						
NL	a, 1997	a, 1990	r, 4y	a, 1990	r, 4y	r, 5y
AT	a, 2010			a, 2008		a, 1996
PL						
PT						
RO	a, 2005	a, 2005	a, 2005		a, 2005	
SI	√		√		√	
SK	a, 2011		a, 2011		a, 2008	
FI						
SE	r, 2y, 1991				r, 2y, 1991	r, 2y, 1991
UK	i		i	i	i	a, 2008
NO	i				i	i
CH	a, 2009	a, 2009	r, 3y, 2010	i	a, 2009	a, 2009
Total	13	9	13	8	14	9
Regular	8	6	9	5	9	7

Legend:

a, xxxx = annual, since xxxx

r, xy, xxxx = regular, every xth year, since xxxx

i = irregular data collection

√ = some data are collected, frequency unknown

3. GRAZING

Q1 Do you collect data on grazing for cattle, sheep and goats?

Data are collected by: Flanders, DK, DE (only cattle and sheep), FR (also horses and donkeys), NL (only cattle and sheep), AT (only cattle – administrative data only), RO, SI, SK, SE, England (only cattle and sheep), NO and CH (FADN, farm census, farm survey (only cattle)).

SI also collects some data that are not further discussed in this chapter due to quality issues:

- Register of agricultural holdings at the Ministry for Agriculture and Environment: data are not representative because data on grazing are related only to common pastures.
- Central cattle breeding database for scientific and research work at Agricultural Institute of Slovenia: data are not representative due to the fact that data collection after 2005 is based on the voluntary and not systematic farmer cooperation.

Q2 Are data specified by livestock type?

All countries, except RO, collect data for cattle differentiated by certain types of cattle. Most countries did not specify different types of sheep or goats.

Q3 In which unit do you collect the data?

All countries collected similar information: days/weeks/months per year. Some countries also collected data on hours per day (DE, SK, CH). Flanders collected data in % per year.

Q4 At which frequency do you collect data?

2005	2006	2007	2008	2009	2010	2011	2012
				DE			BE
NL	NL	NL	FR NL	NL	NL AT	NL AT	NL AT
RO	RO	RO	RO	RO	RO	RO SK	RO SK
SE		SE	UK	SE		SE	UK
		CH ¹		CH ²	NO CH ¹²³	CH ²	CH ²

¹ Farm census ² FADN ³ Farm survey

Q5 Data are representative for following geographical scale?

NUTS0	RO, AT
NUTS1	England
NUTS2	DE, SE, SK, NL
NUTS3	Flanders, CH (farm survey), NO

Q6 Do you collect data by other scales (e.g. by farm type)?

Data are collected by other differentiations in England (farm size and farm type), NO (farm type, agricultural land, size of herd), CH (FADN: farm type and altitude, farm census: cattle, pig/poultry, mixed livestock/arable) and SE where various differentiations are possible.

Q7 Data are representative for?

Data are representative for all holdings, except in FR (productive grassland), England (certain thresholds), CH (FADN), AT (holdings covered by IACS).

Q8 Are data collected linked with other agricultural surveys?

Data in Flanders can be linked to other data (parcel registration), DE (Agricultural Census), NL (farm survey), CH (FADN, farm survey, farm census), NO (farm survey), SE links with other surveys possible, UK (June survey), SK (survey on fertiliser consumption), RO (FADN).

Conclusion:

In the 13 countries that collect data on grazing, more than 2/3 of the countries collect data on days/week/months of grazing per year of cattle (differentiated by type), sheep and goats, at NUTS0 or lower regional level, in a way that allows comparison with other characteristics. This underlines the importance of this indicator noted by the Commission as well as by countries.

4. ANIMAL FEEDING

Q9 Do you collect data on animal diets?

Flanders (only pigs and poultry), DK (Agrifish, DCA¹), DE (only pigs), ES (pigs and poultry), FR, NL, RO and CH (FADN, farm census (cattle and pigs)) collect data on animal feeding. Data from DK (Agrifish) are not available for exchange.

Some data linked to this topic exist in IT and SE but are not discussed in more detail in this chapter:

- In IT some data are collected on animal feeding from enterprises that produce and sell animal feeds and farms that produce for their own consumption.
- In SE data on feed imports, production and export for cattle, pigs and poultry exist², but no information is collected at farm level.

Q10 Are data specified by livestock type?

All countries collect data on animal feeding differentiated by livestock types.

Q11 Do you collect data for poultry and pigs?

Some countries collect data on phase feeding and protein levels for pigs and poultry. Flanders and DK (Agrifish) also collect data on P contents, DE on average fattening performance (pigs), ES low protein, phytase, inorganic phosphate, amino acid additives (laying hens) and NL feed deliveries to farms.

Q12 Do you collect data on animal diets of cattle other than on grazing?

Data is collected in DK (DCA), FR, NL, RO and CH (farm census).

¹ See Annex for more information on data collections in DK on manure management

² Statistics on feed are for instance available in a report from Swedish Board of Agriculture "Jordbruksverkets foderkontroll 2010" and in the publication "Jordbruksstatistisk årsbok" in chapter 8.

Q13 At which frequency do you collect data?

2005	2006	2007	2008	2009	2010	2011	2012
BE	BE	BE	BE	BE	BE	BE	BE
DK ¹	DK ¹²	DK ¹	DK ¹	DK ¹	DK ¹	DK ¹	DK ¹
			FR			DE	
NL	NL	NL	NL	NL	NL	NL	NL
RO	RO	RO	RO	RO	RO	RO	RO
		CH ³		CH ⁴	CH ³⁴	CH ⁴	CH ⁴

¹ DCA ² Agrifish ³ Farm census ⁴ FADN

Q14 Data are representative for following geographical scale?

NUTS0	ES, NL, RO
NUTS1	DE
NUTS2	CH (farm census)
NUTS3	Flanders

Q15 Do you collect data by other scales (e.g. by farm type)?

Data are not collected by other differentiations, except CH (FADN: farm type and altitude, farm census: cattle, pig/poultry, mixed livestock/arable).

Q16 Data are representative for?

Data are often not representative for all farms: Flanders (farms that reduce their N and P inputs), DK (Agrifish: farmers documenting a higher efficiency than standard), CH (FADN), DE (farm holdings with 50 or more pigs and/or 10 or more breeding sows), ES (Intensive rearing), RO (Nitrates Directive: nitrate vulnerable zones).

Q17 Are data collected linked with other agricultural surveys?

Data in Flanders can be linked (parcel registration), DE (pig livestock survey), ES (livestock census), NL (farm identification number), CH (FADN, farm census), RO (FADN).

Conclusion:

Data on animal feeding is currently not much collected, only 9 countries collect data and the data collected varies much. In more than half of these countries data are collected on crude protein levels of pigs and poultry (differentiated by livestock type) and other feed for cattle at NUTS0 or lower regional level, annually or at regular intervals, in a way that allows comparison with other characteristics, however often not representative for the whole population.

5. HOUSING**Q18 Do you collect data on housing systems for cattle, pigs and poultry?**

Flanders, CZ, DK (Agrifish, DCA), ES, FR, LV, NL, RO (Nitrates Directive, MARD³), SI, SK, England and CH (farm census, farm survey) collect data on housing of cattle, pigs and poultry and DE only on poultry.

³ See Annex for more information on data collections in Romania on manure management

LV and SI are not further discussed in this chapter:

- LV: Food and Veterinary Service has a database which lists the housing system of poultry holding. Database is however not accessible for the public.
- SI: Register of laying hen rearing facilities for all market oriented agricultural holdings at Veterinary Administration. These data however don't include small rearing facilities for own farm consumption. The data also refer to the maximum available rearing places and would therefore without correction lead to an overestimation.

Q19 Are data specified by livestock type?

All countries collect data on housing of cattle, pigs and poultry (DE only poultry) differentiated by livestock types.

Q20 Which housing systems are specified in your data collection?

Flanders and SK collect data on housing by type of manure (solid/liquid). Flanders pigs and poultry low ammonia emission types. DK (Agrifish, DCA), DE, ES, NL, RO, CH (farm survey, farm census), NO, England and CZ collect data on categories specified in the questionnaire (with in some cases some additional categories). NL (housing system according to the Regulation Ammonia and Animal Husbandry).

Q21 Do you collect data on exhaust air treatment techniques applied to reduce emissions of ammonia?

FR (only pigs and poultry), NL, RO and CH (farm census) collect data.

Q22 Do you collect data on ventilation systems?

NL, ES, RO, CH (farm survey, farm census) and CZ collect data.

Q23 At which frequency do you collect data?

2005	2006	2007	2008	2009	2010	2011	2012
			BE	BE	BE	BE	BE
CZ	CZ	CZ	CZ	CZ	CZ	CZ	CZ
DK ¹	DK ¹²	DK ¹²	DK ¹²	DK ¹²	DK ¹²	DK ¹²	DK ¹²
DE	DE	DE	DE	DE	DE	DE	DE
			FR				
			NL				
RO	RO	RO	RO	RO	RO	RO	RO
						SK	SK
	UK			UK			
		CH ³			CH ³⁴		

¹DCA ² Agrifish ³ Farm census ⁴ Farm survey

Q24 Data are representative for following geographical scale?

NUTS0	ES, RO
NUTS1	DE, England
NUTS2	DK (Agrifish), NL, CH (farm census), SK
NUTS3	Flanders, CH (farm survey)

Q25 Do you collect data by other scales (e.g. by farm type)?

Data are not collected by other differentiations, except CH (farm census: cattle, pig/poultry, mixed livestock/arable) and England (farm size and farm type).

Q26 Data are representative for?

Data are representative for all farms except in DK (Agrifish: farmers that are obliged to submit a fertilizer account (almost all farmers)), ES (Intensive rearing), England (certain thresholds), CZ (nitrate vulnerable zones), RO (Nitrates Directive: nitrate vulnerable zones).

Q27 Are data collected linked with other agricultural surveys?

Data in Flanders can be linked (parcel registration), ES (livestock census), FR (FSS, annual agricultural survey), NL (farm structure surveys), CH (farm survey, farm census), England (June survey), SK (survey on fertiliser consumption), RO (FADN).

Conclusion:

In 13 countries data on housing are collected. In more than 2/3 of these countries data are collected on types of housing of cattle, pigs and poultry (differentiated by type), at NUTS0 or lower regional level, annually or at regular intervals. In a majority (>50%) of the countries data are collected in a way that allows comparison with other characteristics. Only in a few countries data on exhaust air treatment and ventilation is collected. The results underline the importance of these data noted by the Commission as well as by countries.

6. MANURE TREATMENT**Q28 Do you collect data on manure treatment?**

Flanders, DK (Agrifish, DCA), ES, FR, NL, AT, England and CH collect data.

Q29 Which types of manure treatment are specified in your data collection?

All countries request information on digestion for biogas. NL and BE also require information on techniques to reduce nitrogen and processing for marketing/transportation. In ES and DK (Agrifish) data is also collected on liquid/solid separation, incineration (DK Agrifish) and aeration (ES).

Q30 At which frequency do you collect data?

2005	2006	2007	2008	2009	2010	2011	2012
BE	BE	BE	BE	BE	BE	BE	BE
DK ¹	DK ¹²	DK ¹²	DK ¹²	DK ¹²	DK ¹²	DK ¹²	DK ¹²
			FR				
NL	NL	NL	NL	NL	NL	NL	NL
			AT	AT	AT	AT	AT
			UK			UK	UK
		CH			CH		

¹DCA ¹ Agrifish

Q31 Data are representative for following geographical scale?

NUTS0	ES, NL
NUTS1	England
NUTS2	CH (farm census), AT (often confidential)
NUTS3	Flanders

Q32 Do you collect data by other scales (e.g. by farm type)?

Data are not collected by other differentiations, except CH (farm census: cattle, pig/poultry, mixed livestock/arable) and England (farm size and farm type).

Q33 Data are representative for?

Data are often not representative for all farms: Flanders (farms with manure processing installations and specialised factories for manure treatment), DK (Agrifish) (farmers that are obliged to submit a fertilizer account (almost all farmers) + plus biogas plants + separation plants), ES (Intensive rearing), England (certain thresholds), AT (holdings with biogas plants under eco-electricity act (obliged to provide data to E-Control)).

Q34 Are data collected linked with other agricultural surveys?

ES (livestock census), FR (FSS), CH (farm census), England (June survey).

Conclusion:

Only 8 countries collect data on manure treatment. More than 2/3 of these countries collect data on manure treatment (digestion for biogas) at NUTS0 or lower regional level. Data are however often not representative for the whole population. In more than half of the countries data are collected annually or at regular intervals, however more than 1/3 of these countries collect data irregularly. In more than 1/3 of the countries data are collected in a way that allows comparison with other characteristics.

7. MANURE STORAGE**Q35 Do you collect data on manure storage systems?**

Flanders, CZ, DK, DE, ES, FR, NL, SI, SK, RO, SE, England, NO and CH (FADN, farm survey, farm census) collect data. Some data other than SAPM exist in SI, but are not representative and are therefore not discussed in this chapter.

Q36 In which unit are data collected?

M3	Flanders, CZ, DE, FR (liquid manure), NL, RO, SK, CH (FADN, farm census)
M2	DE, FR (solid manure), NL, CH (farm survey)
Months	CZ, FR (cattle, liquid), NL, RO, SK, SE, England, NO, CH (farm survey)
Other	Flanders (ton), SI (yes/no), England (type of store), NO (% distribution by type of storage)

Q37 Which types of storage do you specify in your data collection?

Data on all or part of the categories specified were collected in most countries. In Flanders, NO and SE data were collected by type of manure (solid/ liquid etc). Some countries made some additions to the list: NL (slurry storage outside animal housing), SK (storage directly on agricultural land).

Q38 Do you collect data on storage cover?

Many countries which collect data on manure storage also collect data on cover:

- DE, ES, FR, SE, England, NO, CH (farm survey, farm census) collect data on storage systems with or without cover.
- DE, ES, FR, SE, CH (farm census) collect data on type of cover.

- SE also collects data on filling above or below manure surface.

Q39 At which frequency do you collect data?

2005	2006	2007	2008	2009	2010	2011	2012
BE	BE	BE	BE	BE	BE	BE	BE
CZ	CZ	CZ	CZ	CZ	CZ	CZ	CZ
DK	DK	DK	DK	DK	DK	DK	DK
DE	DE	DE			DE		
			FR				
			NL				
RO	RO	RO	RO	RO	RO	RO	RO
			SK	SK	SK	SK	SK
SE		SE		SE		SE	
		UK		UK	UK	UK	UK
		CH ³		CH ¹	NO CH ¹²³	CH ¹	CH ¹

¹FADN ²Farm survey ³Farm census

Q40 Data are representative for following geographical scale?

NUTS0	ES, RO
NUTS1	DE, England
NUTS2	NL, SK, SE, NO, CH (farm census)
NUTS3	Flanders, CH (farm survey)

Q41 Do you collect data by other scales (e.g. by farm type)?

Data are collected by other differentiations in CH (farm census: cattle, pig/poultry, mixed livestock/arable, FADN: farm type and altitude), SE (different differentiations possible), NO (Farm type, agricultural area in use) and England (farm size and farm type).

Q42 Data are representative for?

Data are sometimes not representative for all farms: CZ (nitrate vulnerable zones), ES (Intensive rearing), England (certain thresholds), CH (FADN), RO (Nitrates Directive: nitrate vulnerable zones).

Q43 Are data collected linked with other agricultural surveys?

Flanders (parcel registration), DE (agricultural Census, FSS), ES (livestock census), FR (FSS), CH (farm census, FADN, farm survey), England (June survey), SE (links with other surveys possible), NO (FSS, Special survey 2000), SK (survey on fertiliser consumption), RO (FADN).

Conclusion:

Most countries (14) collect data on manure storage. More than 2/3 of the countries collect data at NUTS0 or lower regional level, representative for the whole population, in a way that allows comparison with other characteristics. More than half of the countries collect data on manure storage (m3/months), and more than 1/3 data on cover (with/without, type). This underlines the importance of this indicator noted by the Commission as well as by countries.

8. MANURE APPLICATION TECHNIQUES

Q44 Do you collect data on manure application techniques?

DK, ES, FR, NL, AT, SE, England (British Fertiliser Survey, Farm Practices Survey), NO and CH (FADN, farm survey, farm census) collect data.

Q45 Which types of application techniques do you specify in your data collection?

Data on all or part of the categories specified were collected in all countries (a few countries made some additions to the list). In AT administrative data from IACS (RDP measure “Nearby ground spreading of slurry and biogas residues” – data is given in m3 slurry).

Q46 Do you collect data on incorporation time?

All countries except NL and AT collect data on incorporation time.

Q47 At which frequency do you collect data?

2005	2006	2007	2008	2009	2010	2011	2012
DK	DK	DK	DK FR	DK	DK	DK	DK
NL					NL		
AT	AT	AT	AT	AT	AT	AT	AT
SE		SE		SE		SE	
			UK ¹	UK ¹²	UK ¹	UK ¹	UK ¹
		CH ⁵		CH ³	NO CH ³⁴⁵	CH ³	CH ³

¹ British Fertiliser Survey ² Farm practices Survey ³ FADN ⁴ Farm survey ⁵ Farm census

Q48 Data are representative for following geographical scale?

NUTS0	ES, AT
NUTS1	England
NUTS2	NL, SE, NO, CH (farm census)
NUTS3	CH (farm survey)

Q49 Do you collect data by other scales (e.g. by farm type)?

Data are collected by other differentiations in CH (farm census: cattle, pig/poultry, mixed livestock/arable, FADN: farm type and altitude), SE (various differentiations possible), NO (main production, agricultural area in use) and England (farm type).

Q42 Data are representative for?

Data are often not representative for all farms: ES (Intensive rearing), England (Farm Practices Survey: Pig & poultry holdings with certain thresholds, British Survey on Fertiliser Practices: holdings with more than 20 hectares), CH (FADN), AT (IACS: data on holdings with RDP measure “Nearby ground application of slurry and biogas residues”).

Q43 Are data collected linked with other agricultural surveys?

ES (livestock census), FR (FSS), NL (FSS), CH (farm census, FADN, farm survey), England (June survey), SE (links with other surveys possible), NO (data could be linked with administrative data for livestock and land use from administrative sources).

Conclusion:

Some countries (9) collect data on manure application techniques. More than 2/3 of these countries collected data on types of techniques and incorporation time, annually or at regular intervals, representative at NUTS0 or lower regional level, in a way that allows comparison with other characteristics. For only more than half of the countries data were also representative for the whole population.

9. CONCLUSIONS

The collection of data on manure management in the countries independent from Commission efforts (SAPM) underlines the importance of these data noted by the Commission as well as by countries. Almost half of the Member States, CH and NO collect data on manure storage, grazing and housing. Data on animal feeding, manure treatment and manure application are however currently only collected by less than 1/3 of these countries. Data collection at European level could therefore significantly improve data availability on these topics in the EU-27, CH and NO.

Looking at the data collection in more detail, the following chapters will show that rather similar data are collected by countries which collect data on manure management:

- Grazing: more than 2/3 of the countries collect data on days/week/months per year of cattle (differentiated by livestock type), sheep and goats, at NUTS0 or lower regional level, in a way that allows comparison with other characteristics. Data collection is regular for more than half of these countries, but for more than 1/3 irregular.
- Animal feeding: In more than half of the countries data are collected on crude protein levels of pigs and poultry (differentiated by livestock type) and other feed for cattle at NUTS0 or lower regional level, annually or at regular intervals, in a way that allows comparison with other characteristics, however often not representative for the whole population.
- Housing: more than 2/3 of the countries collect data on types of housing of cattle, pigs and poultry (differentiated by livestock type), at NUTS0 or lower regional, annually or at regular intervals.
- Manure treatment: more than 2/3 of the countries collect data on digestion for biogas, at NUTS0 or lower regional level. However data are often not representative for the whole population. Data collection is regular for more than half of these countries, but for more than 1/3 irregular.
- Manure storage: more half of the countries collect data on manure storage types in m3 and/or months), at NUTS0 or lower regional level, representative for the whole population, in a way that allows comparison with other characteristics.
- Manure application techniques: more than 2/3 of the countries collect data on types of techniques and incorporation time, representative at NUTS0 or lower regional level, annually or at regular intervals, in a way that allows comparison with other characteristics. Data are representative for the whole population in 6 countries.

10. FOLLOW UP ACTIONS

The Inventory was carried out to serve two purposes:

1. To identify the current state of data collections on manure management in EU-27, CH and NO.
2. To identify which existing data could be collected at EU-level in the short term to provide the Commission with updated data in the short term.

Currently the Commission is negotiating a new legislation on a system of Farm and Satellite Surveys for the period 2016-2026. The Commission proposes to collect regularly data on manure management in all MS, NO and CH. This means that if the draft legislation is approved the earliest data on manure management (2016) would come available at 2018 at EU-level. To cover the needs in the intermediate term the Task Force on Fertiliser Statistics proposed to carry out an inventory on the available data and collect these data from the MS. This suggestion was also discussed and agreed upon in the AEI WG meeting in 2012. In coordination with the stakeholders (Commission, GHG, NH₃, Nitrate Directive networks) the inventory was set-up and distributed. The results of the inventory have been discussed with the stakeholders. It was decided to collect the following data on manure management for the period 2000-2012 from the institutions which replied to have such data available. The deadline for transmission of data is 15 December 2012. The Commission aims to provide an overview on the current situation of manure management in EU-27, NO and CH based on this follow-up survey on manure management, data from the SAPM 2010, data from the GHG and NH₃ inventories and the Nitrates Directive in the first half of 2013.

The follow-up survey covers the following topics:

- Grazing (average annual grazing time in weeks) for cattle (specified in young cattle, dairy cows, mature dairy cattle), goats and sheep.
- Animal housing (average annual number of animals) for cattle (specified in young cattle, dairy cows, mature dairy cattle) in tied stalls with liquid/slurry production, tied stalls with solid manure production, loose housing, cubicle housing and other housing. Pigs (specified by piglets <20 kg, pigs 20-50 kg, fattening pigs and sows) in houses with fully slatted floors, partially slatted floors, solid floors, entire surface is deep litter, outdoor and other housing. Laying hens in deep litter house, aviary house, enriched cages with belt aeration, enriched cages without belt aeration and other housing.
- Manure storage (amount of manure stored in m²/m³/tonnes/months) of solid storage/heaps, lagoons, tanks, pit storage below animal confinements, in-house deep litter and other storage facilities.

The follow-up survey was sent out in autumn 2012. Data have been received from most of the institutes which were addressed.

ANNEX 1 DATA COLLECTION BY COUNTRY (OTHER THAN SAPM)

BE (Flanders)

- VLM (parcel registration)
 - Grazing of cattle, sheep and goats (annual, since 2012)
 - Animal feeding of pigs and poultry (annual, since 2000)
 - Housing of cattle, pigs and poultry (annual, since 2008)
 - Manure storage (annual, since 1992)
- VLM (annual, since 1997)
 - Manure treatment

CZ

- Nitrates Directive (sample of 250 farms) (annual, since 2005):
 - housing of cattle and pigs
 - manure storage

DK

- Agrifish (irregular, since 2006)
 - Animal feeding cattle, pigs and poultry (data are not available for exchange)
 - Housing of cattle, pigs and poultry
 - Manure treatment
- Aarhus University
 - Grazing of cattle, sheep and goats (irregular)
 - Manure storage (annual, since 1985)
 - Manure application (annual, since 1985)
- Danish Center for Food and Agriculture (annual, since 1985)
 - Animal feeding cattle, pigs and poultry
- Danish Plant Directorate (annual, since 1985)
 - Housing of cattle, pigs and poultry
- Danish Energy Agency (annual since 1985)
 - Manure treatment

DE

- Survey in 2009
 - Grazing of cattle and sheep
- Survey in 2011

- Animal feeding of pigs
- Annual survey in enterprises with hen keeping places (annual, since 2002)
 - Housing of laying hens
- Until 2007 regular survey
 - Manure storage

Comments: " Data quality of the different items covered by the inventory varies".

ES

- Survey intensive rearing (irregular):
 - Animal feeding of pigs and poultry
 - Housing of cattle, pigs and poultry
 - Manure treatment
 - Manure storage
 - Manure application

FR

- Surveys on agricultural practices on productive grasslands and housing systems (planned every 5-6 years, since 2008)
 - Grazing of cattle, sheep and goats, horses and donkeys
 - Animal feeding cattle, pigs and poultry
 - Housing of cattle, pigs and poultry
 - Manure treatment
 - Manure storage
 - Manure application

IT

- Survey
 - Animal feeding cattle, pigs and poultry

Distribution of animal feeds (we can distinguish among different type: cattle, poultry, pigs etc). The statistical unit is the enterprise that produces and sells animal feeds and farms that produce for their own consumption.

LV

- Food and Veterinary Service. (Database is not public access).
 - Housing of poultry

NL

- Grassland survey (annual, since 1997):
 - Grazing of cattle and sheep (sheep irregular)
- Dienst regelingen registers (annual, since 1990):
 - Animal feeding of pigs and poultry
 - Manure treatment
- Farm structure survey (every 4 years):
 - Housing of cattle, pigs and poultry
 - Manure storage
 - Manure application (every 5 years)

AT

- IACS
 - Grazing of cattle (annual, since 2010)
 - Manure application: (annual since 2005)
nearby ground spreading of slurry and biogas residues” – data is given in m3 slurry.
- E-Control (the Austrian Electricity Regulation Authority) (annual, since 2008)
 - Manure treatment:
input data on raw material for biogas production

RO

- Nitrates Directive (annual, since 2005):
 - grazing of cattle, sheep and goats
 - animal feeding cattle, pigs and poultry
 - housing of cattle, pigs and poultry
 - manure storage
- Statistical Yearbook of Romania
 - grazing of cattle, sheep and goats
- operative MARD:
 - animal housing of cattle, pigs and poultry
 - grazing of cattle, sheep and goats

SI

- Register of laying hen rearing facilities for all market oriented agricultural holdings at Veterinary Administration. These data are not representative because they don't include small rearing facilities for own farm consumption.
- Register of farms (agricultural holdings) at Ministry for Agriculture and Environment. These data are not representative because the data on grazing are related only for the common pastures.
- Central cattle breeding database for scientific and research work at Agricultural Institute of Slovenia. These data are not representative due to the fact that data collection after 2005 is based on the voluntary and not systematic farmer cooperation.

SK

- Survey on fertiliser consumption (annual, since 2011):
 - grazing of cattle, sheep and goats
 - housing of cattle, pigs and poultry
 - manure storage (since 2008)

SE

- Survey every 2 years (since 1991):
 - grazing of cattle
 - manure storage:

in the Swedish survey the questions on manure storage like in SAPM are focused on the type of the manure that is produced not on the construction of the storage facilities.
 - manure application techniques

Comments:

"Statistics on feed are available in a report from Swedish Board of Agriculture "Jordbruksverkets foderkontroll 2010" and in the publication "Jordbruksstatistisk årsbok" in chapter 8".

UK (England)

- Survey on Farm Practices (holdings have to have at least 50 cattle, 100 sheep, 100 pigs, 1,000 poultry or 20 hectares of arable crops or orchards)
 - Grazing of cattle, sheep and goats (irregular, 2008 and 2012)
 - Housing of cattle, pigs and poultry (irregular, 2006 and 2009)
 - Manure treatment (irregular, 2008, 2011 and 2012)
 - Manure storage (irregular, 2007, 2009-2012)

- Manure application (irregular, 2009)
- British Survey on Fertiliser Practices (annual, since 2008)
 - Manure application

NO

- 2000 Survey (6000 farms, 60% response, results available at: http://www.ssb.no/emner/10/04/10/rapp_200139/rapp_200139.pdf)
 - grazing of cattle, sheep and goats, horses
 - manure storage:

relatively detailed questions on the various types of storage (manure cellar for slurry, manure pit for slurry, indoor deep litter, outdoor litter/encloser, storage for solid dung and manure) and on the percentage distribution of the amount of manure at the start of the spring work by type of storage.
 - manure application:

also size of the area that was spread with manure, distributed by crop area, meadows for mowing and pastures).
- 1990-1997, 1999 (Census), 2003, 2010 Surveys
 - manure storage:

data on storage capacity (number of months, 2011: weeks) was asked at the CoA 1989, CoA 1999 and in yearly sample surveys of agriculture 1990-1997, 2003 and 2011. - The yearly sample surveys from 1990-1997 did not cover types of storage.
 - manure application (2003 and 2010):

also size of the area that was spread with manure, distributed by crop area, meadows for mowing and pastures).

Comments:

"Very little has been conducted on a regular basis. As we all know, this is one of the "achilles heels" of agri-environmental statistics: several irregular surveys with different scope, classifications and level of details. Accidentally, in the middle of June, we were approached by the national agricultural authorities that want us to conduct a new survey on the storage and use of manure (and fertilizer) in 2013. The main reason is the need for better information to calculate air emissions and area run-off of nutrients. They have asked us to consider several alternatives, with or without the inclusion of commercial fertilizers. In the planning process, we will of course keep an eye on the evolution of the FSS satellites".

CH

- FADN (annual, since 2009):
 - grazing of cattle, sheep and goats
 - animal feeding cattle, pigs and poultry
 - manure storage
 - manure application techniques

- Farmer surveys for updating ammonia emissions (2002, 2007, 2010)
 - grazing of cattle, sheep and goats
 - animal feeding cattle, pigs and poultry
 - housing of cattle, pigs and poultry
 - manure storage
 - manure treatment
 - manure application techniques
- Farm survey every 3 years since 2010:
 - grazing of cattle
 - housing of cattle, pigs and poultry
 - manure storage
 - manure application techniques