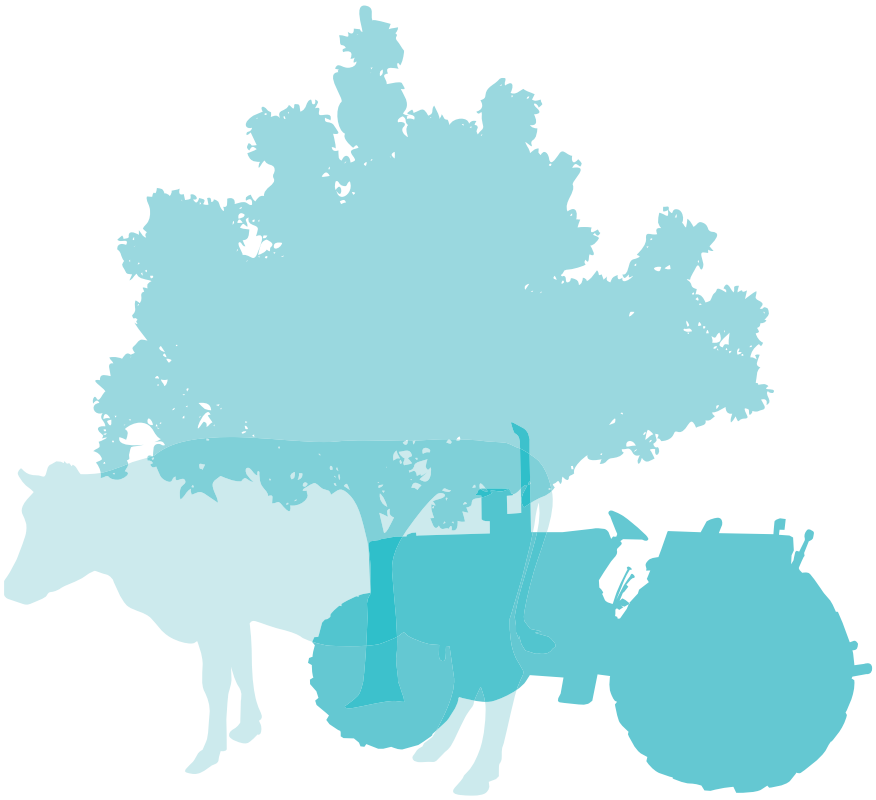
Livestock manure and nutrients 1990–2008*



Statistics Netherlands

Explanation of symbols

.	= data not available
*	= provisional figure
x	= publication prohibited (confidential figure)
–	= nil or less than half of unit concerned
–	= (between two figures) inclusive
0 (0,0)	= less than half of unit concerned
blank	= not applicable
2007–2008	= 2007 to 2008 inclusive
2007/2008	= average of 2007 up to and including 2008
2007/'08	= crop year, financial year, school year etc. beginning in 2007 and ending in 2008
2005/'06–2007/'08	= crop year, financial year, etc. 2005/'06 to 2007/'08 inclusive

Due to rounding, some totals may not correspond with the sum of the separate figures.

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Contents

Summary

Since the beginning of the nineties, standard factors for manure production and nutrient excretion per livestock category have been determined by the Working group for the Uniformisation of the calculation method of Manure and nutrient figures (WUM). The WUM consists of representatives of the Ministry of Agriculture, Nature and Food Quality (Department of Knowledge (LNV-DK) and the National Service for the Implementation of Regulations (LNV-DR)), LEI Wageningen UR, Netherlands Environmental Assessment Agency (PBL), Animal Sciences Group (ASG Wageningen UR) and Statistics Netherlands (CBS). The accounting methodology used by the working group is based on a nutrient balance per animal in which the excretion of nutrients is calculated from the difference between the intake of nutrients with the feed and the retention of nutrients in animal products. Although this principle has not changed, parameters are regularly adjusted where new scientific insights play an important role. The figures have not yet been revised, although some adjustments of principles also effect calculations in previous years. The main reason for a revision of the figures now is the requirement of a

Table 1
Nutrient excretion by livestock in the Netherlands

	1990		1995		2000		2005		2006		2007		2008*	
	Nitrogen (N)	Phosphate (P_2O_5)	Nitrogen (N)	Phosphate (P_2O_5)	Nitrogen (N)	Phosphate (P_2O_5)	Nitrogen (N)	Phosphate (P_2O_5)	Nitrogen (N)	Phosphate (P_2O_5)	Nitrogen (N)	Phosphate (P_2O_5)	Nitrogen (N)	Phosphate (P_2O_5)
	mln kg													
Original figures														
Cattle, excl. fattening calves	415	111	405	110	306	91	277	87	268	83				
Fattening calves	6	3	9	4	13	5	12	5	13	5				
Pigs	150	69	150	60	119	48	98	41	101	42				
Poultry	65	33	66	29	65	32	58	27	57	26				
Sheep and goats	20	5	20	4	18	5	13	4	12	4				
Fur-bearing animals and rabbits	.	.	2	2	2	1	2	1	2	1				
Horses and ponies	4	1	5	2	6	2	7	3	7	2				
Total livestock	661	221	658	211	529	185	468	167	460	165				
Revised figures														
Cattle, excl. fattening calves	445	118	428	115	327	97	285	88	277	86	281	86	290	89
Fattening calves	6	3	9	3	13	5	12	5	13	5	14	5	15	5
Pigs	150	69	150	60	121	48	101	42	102	43	105	43	108	44
Poultry	65	33	65	29	63	32	58	27	58	27	59	27	61	28
Sheep and goats	20	5	20	4	18	5	13	4	12	4	12	4	11	4
Fur-bearing animals and rabbits	0	0	2	2	2	1	2	1	2	1	2	1	2	1
Horses and ponies	4	1	5	2	6	2	7	3	7	2	7	3	7	3
Total livestock	691	229	680	216	549	191	479	170	471	169	480	169	494	174

Table 2
Manure production by livestock in the Netherlands

	1990		1995		2000		2005		2006		2007		2008*	
	liquid manure	solid manure	liquid manure	solid manure	liquid manure	solid manure	liquid manure	solid manure	liquid manure	solid manure	liquid manure	solid manure	liquid manure	solid manure
	mld kg													
Cattle, excl. fattening calves	63.3	0.8	58.2	1.0	52.6	1.1	50.1	1.1	49.3	1.0	49.1	1.0	50.8	0.9
Fattening calves	2.1	–	2.5	–	3.0	–	2.9	–	3.0	–	2.9	–	3.0	–
Pigs	16.4	–	16.1	–	14.1	–	11.9	–	11.8	–	12.0	–	12.3	–
Poultry	1.5	1.0	0.9	1.2	0.5	1.6	0.1	1.3	0.1	1.3	0.1	1.4	0.1	1.4
Sheep and goats [1)]	1.6	0.3	1.5	0.3	1.4	0.3	1.3	0.4	1.3	0.4	1.3	0.5	1.2	0.5
Fur-bearing animals and rabbits	–	0.0	–	0.1	–	0.1	–	0.1	–	0.1	–	0.1	–	0.1
Horses and ponies [1)]	0.2	0.3	0.3	0.4	0.3	0.5	0.4	0.6	0.4	0.5	0.4	0.5	0.4	0.6
					–	–								
Total livestock	84.9	2.5	79.5	3.0	71.9	3.6	66.6	3.5	65.9	3.4	65.7	3.5	67.8	3.5

[1)] The pasture manure of sheep, horses and ponies is regarded as liquid manure.

consistent dataset by the Emission Registration (ER) as a major user of the data. At the end of 2008, when results for 2007 became available, it was decided to revise time series from 1990.

The main change in accounting standards consists of a uniform calculation of feed requirements of dairy cattle. This increases the excretion of nitrogen and phosphate. Many other improvements were also made which, depending on the alteration, may increase or reduce excretion. Table 1 shows the nutrient excretion according to the original and the revised series. Table 2 shows the production of livestock manure. The effect of recalculation on the quantity of manure is negligible.
Manure production and nutrient excretion were almost identical in 2007 to those in 2006. Only nitrogen excretion increased slightly by 1.8 percent. Since 2003 there has been an almost constant level of manure production and excretion of nitrogen and phosphate. Provisional figures for 2008 show an increase compared with 2007 of nearly 15 million kg of nitrogen and more than 5 million kg of phosphate. The provisional figures are calculated by multiplying the 2007 excretion factors by animal numbers in 2008. The increase thus reflects the effect of a larger herd. The number of dairy cows increased by 53,000 in 2008, the number of pigs by 235,000 and poultry by 3.7 million birds compared with the previous year. Excretion factors for 2008 will become available in the course of 2009. Only then can it be determined whether – and to what extent – nutrient excretion in 2008 differs from that in 2007.

Manure production decreased by 21 percent in the period 1990–2007, nitrogen excretion by 31 percent and phosphate excretion by 26 percent. The calculations are performed in accordance with the methodology of the WUM.

The availability of basic information on feed consumption and its composition has decreased in recent years. This mainly affects the reliability of the results for the different categories of cattle. As the results from nutrient excretion are used in different calculation models, such as the calculation of ammonia emission, lack of basic information also affects the reliability of the results of these models.

1. Standardised method for calculating manure production and nutrient excretion

Statistics Netherlands calculates annual manure production and nutrient excretion of Dutch livestock. The calculations are performed for traditional nutrients in livestock manure: nitrogen, phosphorus and potassium. Nitrogen and phosphorus cause problems for the environment. Manure production and nutrient excretion are calculated by multiplying standard factors for manure production and nutrient excretion in kilograms per animal per year by the number of animals in the agricultural census. The standard factors (Tables 6 to 29) are set annually by the Working group for the Uniformisation of the calculation method of Manure and nutrient figures (WUM). Several organisations are represented in this working group, each of which supplies basic information for the calculations. The aim of cooperation in the working group is to realise a standardised calculation of the national manure production and nutrient excretion. The WUM consists of representatives of the Ministry of Agriculture, Nature and Food Quality (Department of Knowledge and the National Service for the Implementation of Regulations), LEI Wageningen UR, Netherlands Environmental Assessment Agency (PBL), Animal Sciences Group (ASG Wageningen UR) and Statistics Netherlands (CBS).
In separate reports and articles (WUM1994a to c, van Eerdt 1995 to 1999, van Eerdt c.s. 2003, van Bruggen 2003 to 2008), standard factors for excretion of nitrogen, phosphate and potassium and manure production per animal are documented for each calendar year from 1990 to 2006.

1.1 Manure production factors

Manure production factors give the annual manure production per animal per year (Tables 6 to 29). The manure production per animal is defined as the quantity of manure (in kg) present in the manure storage after several months, including rinse water and spilled drinking water. For cattle and sheep, the quantity of manure produced during grazing is added. All pasture manure is calculated as liquid manure. Adjustment of manure production factors takes place only when new information becomes available. Manure production factors for 2007 for all animal categories, with the exception of rosé veal calves, are similar to those of 2006.

1.2 Nutrient excretion factors

Nutrient excretion factors (tables 6 to 29) are calculated annually for each substance separately (N, P_2O_5, K_2O) on the basis of a balance per animal:

Excretion of nutrients = intake of nutrients with feed – retention of nutrients in animal products.

The basis for the calculation of excretion factors is formed by so-called technical indicators. These are data on feed use (concentrate and forage) and livestock production (milk, eggs, growth of animals and animals born). In addition, data on the N, P and K levels in feed and in animal products are necessary. A distinction is made between annually updated indicators and ‘fixed’ indicators. The ‘fixed’ indicators are set for a number of years because no annual information is available. Studies have regularly been carried out in the context of manure policy to determine fixed nitrogen and phosphate excretion factors per livestock category (van der Hoek, 1987; Tamminga et al., 2000; Tamminga et al., 2004 Jongbloed et al., 2005, Kemme et al., 2005a and 2005b). The information on fixed indicators collected in these studies is subsequently applied by the WUM. At the request of the WUM, the fixed indicators for grazing livestock were revised in 2000 (Heeres, 2001). The technical ratios that have to be updated annually are based

on statistics and technical administrations of the relevant year as far as possible (LEI-WUR, CBS, a, b, c; Agro Vision; OPNV).
In addition to technical indicators, nutrient contents of feed and animal products are also used. On the basis of the Fertilizers Act, feed traders are legally required to report to the Ministry of Agriculture all deliveries of concentrates for indoor livestock (chapter 3). Since 2006, deliveries of concentrates for grazing livestock no longer have to be reported (section 2.2).

The nutrient contents of forage were analysed by BLGG. The sources used with regard to nutrient levels in animal products are specified in footnotes to the tables.

Revision of figures 1990–2006

Since the development of the calculation methodology in the early nineties, assumptions are regularly updated based on new scientific insights. These adjustments often also affect the calculations for previous years to a greater or lesser degree. For practical reasons, recalculations have never been carried up to now. The main reason to revise the figures now is the requirement of a consistent data set by the Emission Registration (ER) as a major user of the data. When results for 2007 came available, it was decided to revise time series from 1990. The main changes are listed below.

– Standardised calculation of VEM requirement and VEM coverage by dairy cattle. During the revision of estimated N and P excretion by cattle (Tamminga et al., 2004) new formulas were developed for calculating the VEM requirement. In the new VEM requirement calculation several components were raised. The new calculation has been applied by the WUM from 2003. At that time the VEM coverage was set at 102 percent by Tamminga et al., but by way of precaution this was not immediately adopted by the WUM. It has now become clear from agricultural practice that the VEM coverage amounts to at least 2 percent above the VEM requirement. Therefore it was decided to set the VEM coverage at 102 percent. As a result of the new calculation of VEM requirement and VEM coverage the excretion of nitrogen and phosphate increases.
– Where possible, provisional data are replaced by definite data which were not available at the time of calculation. For example: average N, P and K content in forage, use of wet feed in the period 1990–1993, use of raw compound feed materials from 2002, use of cattle concentrate in the period 2000–2006, milk production volume in 2001 and 2006 and stocks of silage maize in the period 2002–2006.
– From 1998 onwards the average composition of compound feed for various animal categories is known from deliveries of concentrates by feed traders. In the context of the manure policy, feed traders are obliged to report deliveries of concentrates to the Ministry of Agriculture. How these annual feed data are used in the period to 2004 is harmonised where possible, including the correction of erratic results. As a result of the revision, the content of phosphate in poultry compound feed in 2001 and 2002 has decreased.
– Preservation losses of wet feed for cattle are taken into account for each year. The consequence is substitution of wet feed by meadow grass which results in a slight increase of nutrient excretion.
– Until 1998 no distinction was made between male and female dairy cattle younger than 1 year. In 1999 it was recognised that most male cattle younger than 1 year are raised by specialist breeders. After 12 months the males are 80 kg heavier and are fed with a winter diet with relatively little protein. This principle is applied retrospectively.
– In the period 1995–2000 the excretion of broiler parents was calculated on the basis of counted breeding female broilers. The contribution of the males was included in de excretion factors per female broiler, resulting in higher excretion factors. However, the agricultural census asks for the number of parents instead of the number of females. The excretion factors are corrected to factors per parent and are now lower. In the 1994 agricultural census, the number of females was asked but, according to the explanatory notes, parents were meant (for the first time). For 1994 it is assumed that the requested numbers, i.c. female broiler parents, were reported.
– During the revision of fixed excretions, the nutrient content of animals was also examined. According to a study in 1999 (Versteegh and Jongbloed, 1999) the contents in broiler parents are more appropriate for the period 1990–1998 than the

used contents according to the World's Poultry Science Association (WPSA) which date from the sixties. For pigs and laying hens there is a trend in the nutrient content of animals because of developments in these sectors. The nutrient contents of previous years will therefore remain unchanged. For other animal categories, such as broilers, laying hens, but also for cattle, there are no reliable data (Jongbloed, 2009).
– A correction has been made for double counting of feed losses in the diet of rosé veal calves in the period 1995–2003.

1.3 Animal categories in the agricultural census

Factors for manure production and nutrient excretion are calculated for all animal categories in the agricultural census, with the exception of the categories 'other poultry' and 'other fur-bearing animals'. As these categories may include several species, assessment of technical indicators on food consumption and animal production is not possible. The number of animals involved is very small, however, and will have a negligible contribution to the total manure production. The agricultural census does not cover all species in animal husbandry in the Netherlands. Some species which are kept in small numbers, such as deer and water buffalo, are missing.

It is assumed that the number of animals in the agricultural census is equal to the average number of animals present during the year and that pen vacancy at the time of enumeration equals the average vacancy rate. For some categories of animals, such as sheep and goats, the number of animals on the census date is not representative for the average number during the entire year because more animals are present in the summer than in the winter. The calculation of the excretion factors takes these circumstances into account.

In the calculation of manure and nutrient production, some animal categories in the agricultural census are aggregated to one category to obtain a better fit with the available figures on food consumption and animal production. For example, young female cattle aged 1–2 years and young female cattle aged 2 years and older are aggregated into one group of young female cattle aged 1 year and older. The weight classes of pigs and the division into males and females were combined into one category of fattening pigs. Manure and nutrient production of piglets is included in the factors per sow. Factors for sheep, goats, rabbits and fur-bearing animals, which are calculated per dam, includes the contribution of males and rearing animals.

1.4 Gaseous nitrogen losses

During storage, the composition of manure changes as a result of decomposition of organic matter, volatilisation of ammonia and volatilisation caused by denitrification of other nitrogen compounds (N_2, N_2O, NO). The quantity of nitrogen in the manure at the time of application is equal to the excretion on the basis of the balance sheet minus gaseous losses. For phosphorus and potassium, there is no difference between the excretion and the quantity present in the manure at the time of application. The use of nutrients in manure is published on the website of Statistics Netherlands (StatLine).
From 1999, gaseous losses are based on fixed emission percentages established under the Fertilisers Act by means of measurements and modelling (Oenema et al., 2000; Groenestein et al., 2005).
In its Environmental Balance, the Netherlands Environmental Assessment Agency (PBL) publishes annual figures for ammonia emissions in the Netherlands. Gaseous nitrogen losses from stables and manure storage reported in the Environmental Balance differ from the results of Statistics Netherlands. LEI-WUR and Statistics Netherlands (Hoogeveen et al. 2006) studied these differences, concluding that several factors, such as different emission rates, different assumptions on manure type and type of housing and different implementation of low-emission housing were relevant. In the course of 2006 the Committee of Experts on the Fertilisers Act (CDM) launched a working group to harmonise the calculation of ammonia emissions. This resulted in a report in 2009 that describes the principles of a new calculation method for ammonia emissions by

agriculture (Velthof et al., 2009). Statistics Netherlands will adopt the principles of this new method in the calculation of gaseous nitrogen losses from stables and manure storage and ammonia losses during grazing. The gaseous nitrogen losses in this article are based on the above-mentioned fixed values combined with improved insights into manure type, housing type and low-emission housing. The results of the questions on housing in the agricultural census of 2008 have been incorporated in the results of 2007.

2. Grazing livestock

Cattle, sheep, goats, horses and ponies use mainly forage supplemented with concentrate. For sheep, goats, horses and ponies the concentrate is provided in the form of compound feed. For cattle, about 90 percent of the concentrate is provided as compound feed, the rest as raw materials such as soya meal. Cattle are also provided with wet feed which consists mainly of by-products from the food industry. These by-products have a lower dry matter rate than compound feed. Specialised compound feed is being increasingly used such as low-protein or protein-rich feed, low phosphorus diets, diets to supplement wet feed or raw materials, single vitamins and nutrients. Feed consumption and composition are presented in tables 30 to 35. The concentrate includes the feeding of raw materials and nutrient mixtures.

The feed intake includes feed losses of 2 percent for compound feed, 3 percent for wet feed and 5 percent for preserved forage. The feed losses are assumed to end up in the manure storage.

2.1 Forage

The forage is grown in the Netherlands and consists primarily of preserved grass products such as grass silage and hay, maize silage and meadow grass. Consumption of grass silage and hay is calculated from the harvest and from stock changes based on CBS statistics. Initially, the use of forage was calculated from the beginning of the indoor season to the beginning of the next indoor season. Consumption of forage is now calculated per calendar year because the questions on stock changes in statistics moved from the beginning of a stable period to the end of a calendar year. Consumption of maize silage is calculated on the basis of harvested maize reduced by 5 percent preservation loss. Until 2006 the preservation loss was estimated at 8 percent. The stock change of maize silage is estimated using data from the Farm Accountancy Data Network (FADN) of LEI-WUR. Meadow grass production is calculated on the basis of the remaining feed requirements of grazing livestock after supplying all other available feed. The composition of the used preserved forage is mainly determined by the harvest of the previous year.
Because there are large differences between the diets on sandy soils (maize silage diet) and peat/clay land (grass silage diet), the WUM distinguishes two regions in the calculation of standard factors for dairy cows and young cattle: South/East Netherlands and North/West Netherlands. This distinction is not necessary for other animal categories. For the calculation for 2007, the provinces Drenthe and Zeeland are allocated to South/East Netherlands on the basis of the proportion of maize silage in the forage diet. Although Drenthe and Zeeland should have been allocated to this region in previous years on the basis of the share of maize silage, the allocation in previous years is left unchanged because of the lack of necessary basic data to make recalculations for the period 1990–2006. The results at national level are hardly affected by the modified classification of regions.

Tables 36 and 37 show the gross production of forage. Although considerable annual fluctuations occur in the production of meadow grass and preserved grass, the tables show that the production per hectare of meadow grass has decreased since 1990 in favour of preserved grass. Some reasons for this are a growing use of preserved forage (maize silage, grass silage and hay) in the grazing period, a longer period during which cows remain indoors and the limited use of autumn grass. The yield of maize silage per hectare increased from the early to the late nineties, from just 12 tonnes of dry matter per hectare to 14–15 tonnes per hectare.

2.2 Concentrate

Concentrate feed includes compound feed, raw materials, wet feed and milk (milk substitutes). Information on the availability of concentrate is known only at the national

level. In recent years, the quality of data on compound feed for grazing livestock has rapidly deteriorated. The main reasons for this are the discontinuation of the survey on feedstuff by the Product Board Animal Feed (PDV), the absence of detailed overviews of the cooperative compound feed production, and the loss of analytical data of types of compound feed. For 2004 and 2005, data from LNV-DR on cattle feed and the quantities of N and P in the feed could still be used, but since 2006, feed suppliers are no longer obliged to report supplied feed for grazing livestock to LNV-DR. Therefore there is no longer any possibility to validate the calculated nutrient uptake by cattle categories on the basis of reported feed deliveries. From 2006, the nutrient intake per category of dairy cattle is calculated from the estimated consumption in relation to the total production of cattle feed in combination with the composition based on feed-value prices from ASG-WUR. For beef categories the diet consists of fixed amounts of rearing feed and fattening feed. The composition of rearing feed and fattening feed is periodically retrieved from a few feed manufacturers.

2.3 Retention of nutrients in animal products

Data on live weight of grazing livestock are occasionally updated. New data on levels of N, P and K in grazing livestock are rarely available. Only the milk yield of dairy cows is updated annually. The milk yield increased gradually from 6,000 kg/cow in 1990 to 7,900 kg/cow in 2007. Table 38 gives the situation in 2007.

2.4 Dairy cows

For most categories of cattle, sheep and goats, only the feed values and the nutrient levels in feed are updated annually. For dairy cows and calves, the composition of the diet (Tables 30 to 35) and the retention of nutrients in animal products are also adjusted (Table 38).
The feed consumption of cattle (excluding dairy cows and calves), sheep and goats has been calculated based on fixed ratios for feed requirement (Tamminga et al., 2004; Kemme et al., 2005).
The feed requirement of dairy cows depends on their milk production. After allocation of the necessary forage and concentrate to other categories of cattle and to sheep, goats, horses and ponies, the rest of the available feed (70 percent) is assigned to dairy cows. The remaining feed requirement for dairy cows is covered by meadow grass. The consumption of meadow grass is thus calculated as a balancing item. To validate this calculation, the gross production of grass per hectare is calculated for each calendar year and compared with that in previous years (Tables 36 and 37).

The length of the grazing period was set at 175 days in 2007 for both regions. In the South/East region, the grazing period was 10 days longer than in 2006. The two regions differ in the application of grazing systems. Cows graze more often in the North/West region. In the South/East region one quarter of cows are kept indoors day and night.

Table 3
Pasturing of dairy cows

	North and West Netherlands		South and East Netherlands	
	2006	2007	2006	2007
	% of dairy cows			
Day and night pasturing	43	33	25	15
Limited pasturing	41	53	49	60
Permanent housing	16	13	26	25
Total	100	100	100	100

Both regions showed a shift of day and night grazing to only daytime grazing compared with 2006. Information on grazing period and grazing systems is based on the CBS survey on cattle and grassland use. On balance, the share of the manure excreted during housing in the summer increased in both regions.

2.5 Horses and ponies

From 1 January 2006, the manure and nutrient production of professionally kept horses and ponies are included in the Fertilizers Act. For the purpose of this legislative change, a calculation of the nutrient excretion by horses and ponies of different weight classes was made by ASG-WUR (Kemme et al., 2005b). The basic principles in this report were adopted by the WUM to determine manure and nutrient excretion factors. The Dutch advisory group on horses provided information on the distribution of horses and ponies by class of adult weight. In addition, the advisory group estimated the distribution of horses and ponies among farming systems in relation to the distribution of excretion during housing and grazing (van Bruggen, 2008).
To avoid a break in series, manure production and nutrient excretion of horses and ponies was also calculated for previous years by multiplying the factors per animal, determined for 2006, by animal numbers in years concerned. Manure and nutrient production of horses and ponies was only calculated for animals observed in the agricultural census, around 130,000 in total. The actual number of horses and ponies is currently estimated at 400,000 to 500,000.

3. Indoor livestock

The nutrient content in the feed of pigs, poultry, rabbits and fur-bearing animals in the period 1990–2007 are shown in Tables 39 to 42.

3.1 Pigs

The technical indicators for pigs and sows are updated based on the results of the Indicator mirror (Agrovision). Given that pigs fall in the category indoor livestock, feed suppliers are required to send annual overviews of delivered pig feed including corresponding quantities of N and P to LNV-DR. These overviews are used to determine the nutrient content in feed for the various categories of pigs by linking farms to which pig feed is supplied to the agricultural census. Subsequently, the N and P levels in pig feed for certain categories of pigs is based on the average composition of the feed delivered to farms that only keep the category of pigs concerned. This approach means that it is no longer necessary to distinguish different types of feed supplied to a particular category of pigs. For fattening pigs, for instance, there is no need for a distinction between starting feed, rearing feed and fattening feed.

3.2 Poultry, fur-bearing animals and rabbits

The technical indicators for broilers and laying hens over 18 weeks are updated annually based on the administration for laying hens and broilers of the FADN (LEI-WUR). Poultry, fur-bearing animals and rabbits are indoor livestock, so feed suppliers are required to submit annual overviews of delivered compound feed including corresponding quantities of N and P to LNV-DR. To determine the nutrient content of compound feed for each category of poultry, farms to which poultry feed is delivered are linked to the agricultural census. Subsequently, the composition of poultry feed for a particular livestock category is based on the average composition of the feed supplied to farms where only the poultry category concerned is kept. In this way, the composition is determined of compound feed for laying hens, broilers and broiler breeders. For ducks, turkeys, rabbits and fur-bearing animals, the registered data of LNV-DR are sufficiently detailed.

3.3 Retention of nutrients in animal products

Data on live weight and the levels of N, P and K in animals and animal products are occasionally updated. However, annual data are available on the starting and finishing weight of fattening pigs, retention by sows (litter per sow, piglets per litter, death loss, replacement of sows), egg production per laying hen and the finishing weight of broilers. Table 43 gives the situation for 2007.

4. Results

To compare manure production and nutrient excretion in 2006 and 2007 with those of previous years, manure production and nutrient excretion of horses and ponies are also calculated for previous years. This is done by multiplying the factors per animal determined in 2006 by the animal numbers of the years concerned.

4.1 Manure production

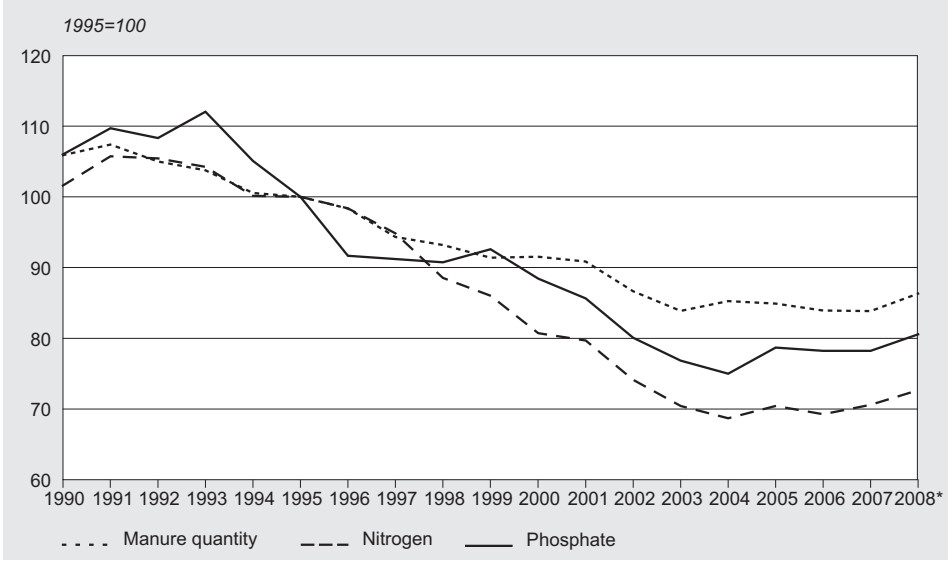
The production of liquid and solid manure in 2007 almost equalled the production in 2006. Only for laying hens was there a shift from liquid to solid manure as a result of the application of new housing data from the agricultural census of 2008. Provisional figures for 2008 show an increase in manure production by about 3 percent compared with 2007, as a result of the increase in livestock. The annual factors for manure production per animal hardly changed, with the exception of manure production of dairy cows which increased by 3,000 kg from 1990 to 26,000 kg per animal per year. This increase is associated with increased milk production per animal. Table 2 (summary) shows manure production in a number of years. For those interested, tables on livestock manure can be compiled from the StatLine database on www.cbs.nl.

4.2 Nitrogen and phosphate excretion

Nitrogen excretion increased slightly, from 471 million kg in 2006 to 480 million kg in 2007. Phosphate excretion remained unchanged in the same period. The increase in nitrogen excretion was mainly caused by higher excretion factors. For cattle, there were higher nitrogen levels in the forage and an increase in milk production per cow. In addition to higher excretion factors per animal, there was also an increase in the number of pigs and poultry.

Figure 1 shows nutrient excretion from 1990 onwards. As a result of the introduction of standards for the application of phosphate, the manure accounting system and manure production entitlements in the late eighties, the decrease in phosphate excretion already started before the introduction of the Minerals Accounting System (Minas) in 1998. For nitrogen, the strongest reduction was established after 1997. During the last years of

1. Manure production and nutrient excretion



Source: CBS.

Minas, nutrient excretion remained practically unchanged. In 2006, Minas was replaced by a system of application standards for the use of nutrients. So far this change has had no significant effect on the nutrient excretion of livestock.
Provisional figures for 2008 show an increase of nitrogen and phosphorus excretion of about 3 percent compared with 2007, caused by livestock expansion.
Nitrogen excretion decreased by 31 percent and phosphate excretion by 26 percent in the period 1990–2007. Table 1 (summary) shows nutrient excretion in a number of years. For those interested, tables on livestock manure can be compiled from the StatLine database on www.cbs.nl.

4.3 Gaseous nitrogen losses

Some of the nitrogen excretion evaporates from stable and manure storage in the form of ammonia and other nitrogen compounds (N_2, NO and the greenhouse gas N_2O) caused by denitrification. When manure is applied to the soil, again some of the nitrogen will evaporate in the form of ammonia. The losses from application of manure are not included in Table 4 with the exception of nitrogen losses during grazing. The losses are based on fixed values (Oenema et al., 2000; Groenestein et al., 2005). For all livestock categories, information on implementation of housing systems from the agricultural census of 2008 is taken into account. The fixed values for ammonia losses are derived from emission factors from the Regulation on ammonia and animal husbandry (Rav). These emission factors will be updated if new data become available. Nitrogen losses because of denitrification were determined by Oenema c.s. on the basis of the literature. The distinction between liquid and solid manure determines the level of the emission factor in the case of denitrification. Table 4 shows that around 14 percent of excreted nitrogen evaporates in stable and storage. The volatilisation from poultry manure is relatively largest. This is partly caused by the large proportion of solid manure which may cause significant losses in the form of other nitrogen compounds by nitrification and denitrification.

Table 4
Gaseous nitrogen losses, 2007 [1)]

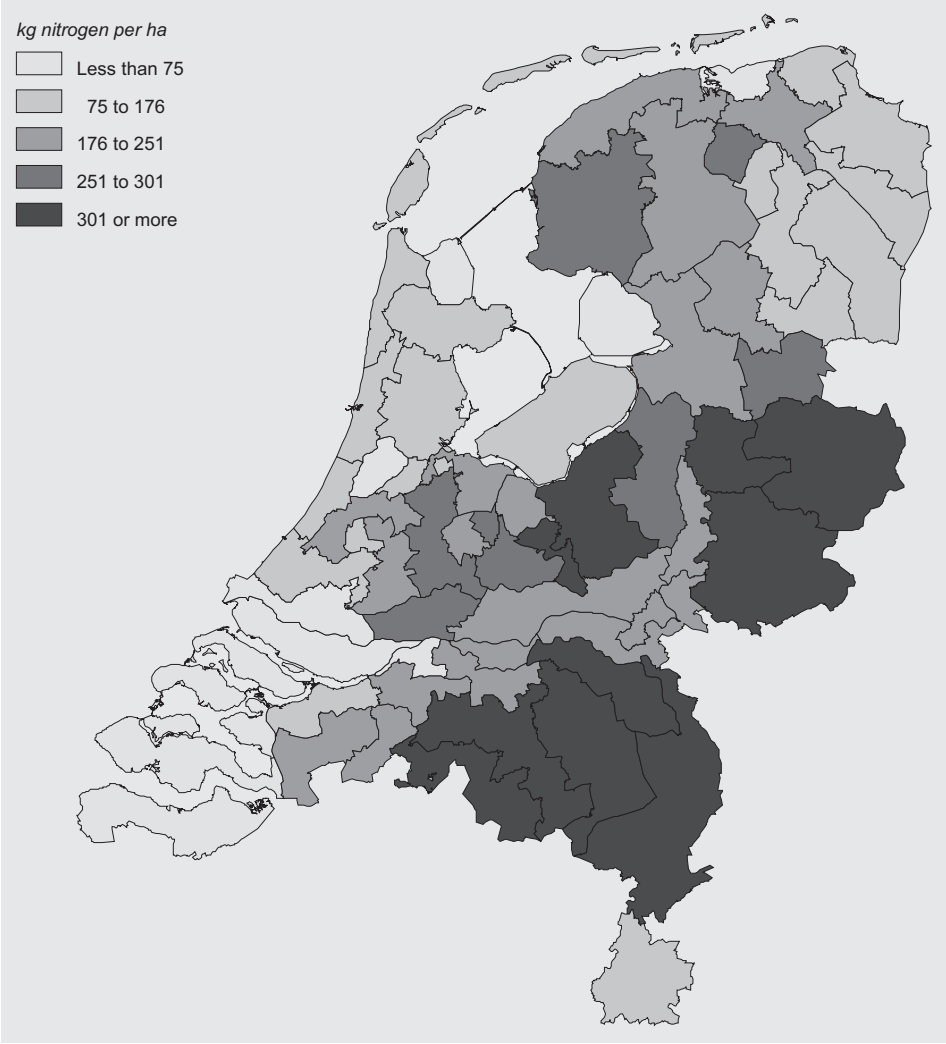
	Nitrogen excretion	Gaseous nitrogen losses			
		stable and storage	of which:		ammonia emission during pasturing
			ammonia	other nitrogen compounds [2)]	
	mln kg N				
Cattle, excl. fattening calves	281	28	21	7	6
Fattening calves	14	2	2	0	–
Pigs	105	19	18	1	–
Poultry	59	13	10	3	–
Sheep and goats	12	1	1	1	1
Fur-bearing animals and rabbits	2	1	1	0	–
Horses and ponies	7	1	0	1	0
Total livestock	480	65	52	13	6

1) The results in this table are based on standard values (Oenema et al., 2000; Groenestein et al., 2005). New insights into manure type, stable type and low-emission housing are included as much as possible.
2) Losses in the form of N_2, NO, N_2O by denitrification.

4.4 Regional differences

The production of phosphate was 90 kg P_2O_5 per hectare of cultivated land in 2007. As expected, there are significant regional differences. As in previous years, production was highest in the West Veluwe with 289 kg P_2O_5/ha, followed by the Western Region of Peel with 280 kg P_2O_5/ha. Haarlemmermeer had the lowest phosphate production, at 13 kg P_2O_5/ha.

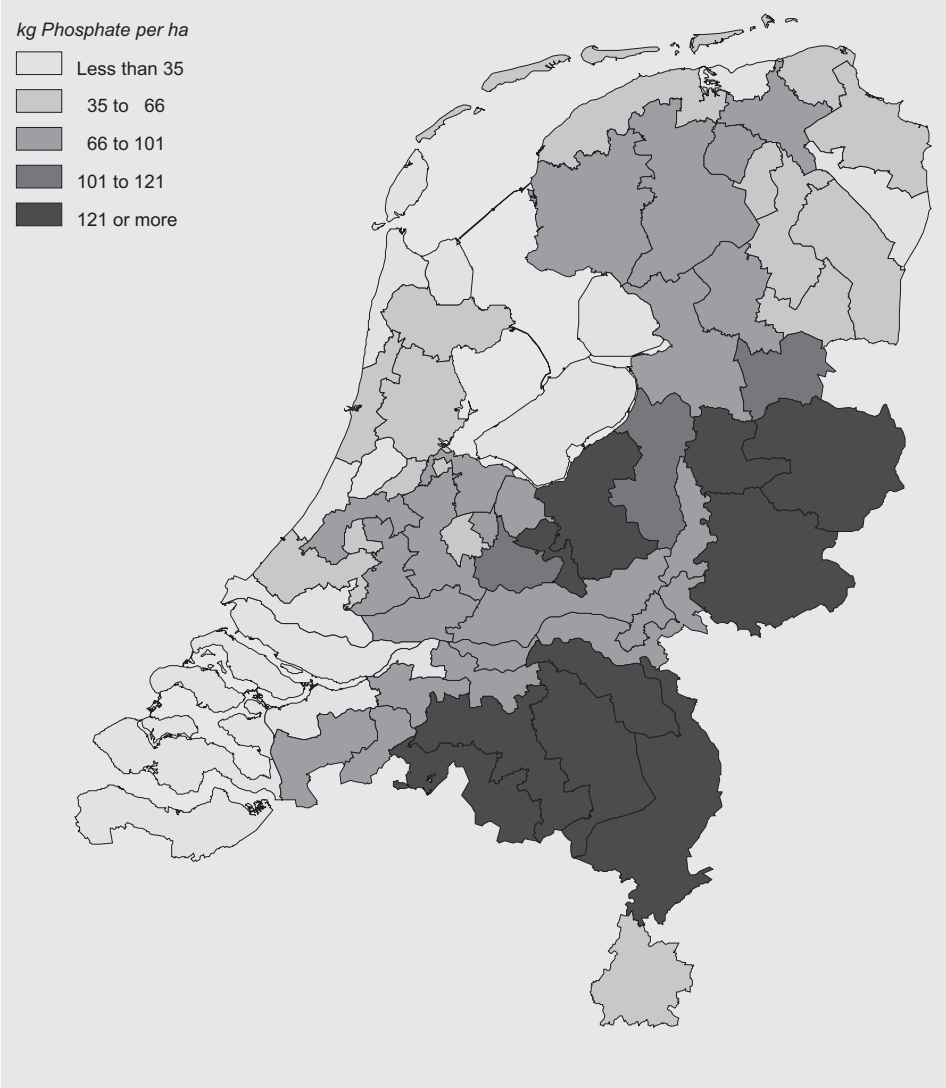
2. Nitrogen in produced manure[1)] per agricultural region in 2007



1) Nitrogen excretion minus gaseous losses in stable and storage.

Source: CBS.

3. Phosphate in produced manure per agricultural region in 2007



Source: CBS.

4.5 Manure production and nutrient excretion per farm type

Farms are classified by economic focus in farm types based on the so-called NEG (CBS, 2008). Table 5 presents manure production and nutrient excretion for the main farm types, along with some general information such as the number of farms and cultivated area. The number of farms decreased by one third between 1995 and 2008. The size of the cultivated area fell slightly by 3 percent.

Figures 4 to 6 show excretion, in terms of phosphate, for highly specialised dairy farms, pig farms and poultry farms respectively. From the development of phosphate excretion per farm it is clear that there has been an ongoing increase. The number of farms fell faster than nutrient production. The phosphate application standard showed a downward trend by advancing standards. Until 1997, the application standard for phosphate was based on application standards for animal manure. From 1998 to 2005, the application standard was calculated from the withdrawal of phosphate by harvested crops plus allowable phosphorus losses to the soil. With the introduction of a system of application standards in 2006, the total possible application is again based on application standards.

Provisional figures for 2008 were calculated by multiplying excretion factors per animal in 2007 by the number of animals in 2008. Provisional figures for all farm types show an increase in phosphate excretion. The increase is caused by the combination of relatively

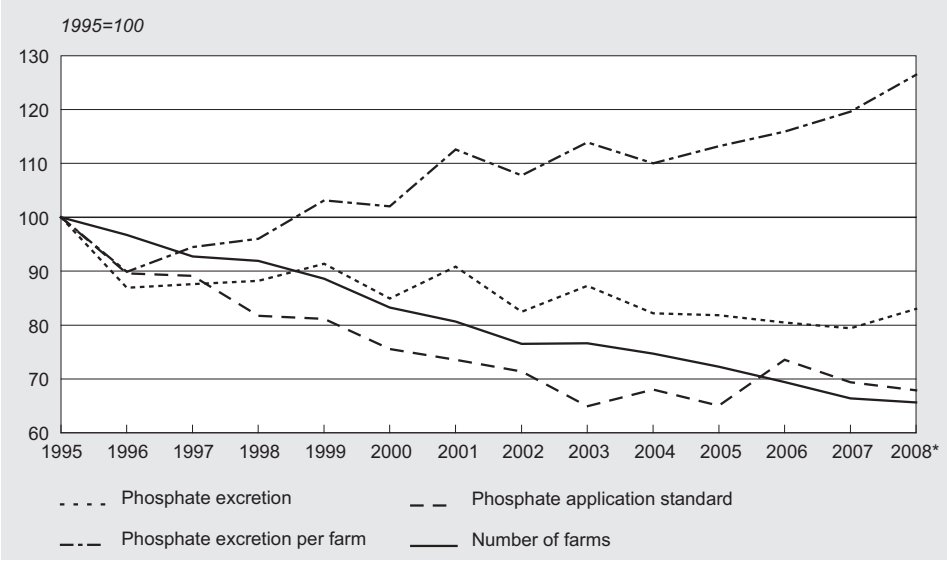
Table 5
Number of farms, manure production, nutrient excretion and cultivated area by main farm type

	Number of farms	Manure production	Nutrient excretion		Cultivated [1] area	Of which:		
			Nitrogen (N)	Phosphate (P_2O_5)		grassland [2]	maize silage	other arable land
	abs.	*bln kg*	*mln kg*		*1 000 ha*			
Total farms								
1995	113,202	82.6	680	216	1,953	1,048	219	686
2000	97,392	75.6	549	191	1,926	1,011	205	709
2005	81,750	70.1	479	170	1,878	976	235	668
2006	79,435	69.3	471	169	1,877	997	218	662
2007	76,741	69.2	480	169	1,871	990	222	659
2008*	75,152	71.3	494	174	1,885	982	242	662
Grazing livestock farms [3]								
1995	55,186	61.5	452	125	1,124	941	149	34
2000	47,474	55.8	347	106	1,102	905	150	47
2005	41,382	53.8	305	97	1,089	879	171	39
2006	40,262	53.2	298	95	1,089	904	151	33
2007	39,410	52.8	301	95	1,085	897	155	34
2008*	39,129	54.6	311	98	1,097	892	169	35
Pigs and/or poultry farms [4]								
1995	14,402	17.8	197	80	97	48	28	22
2000	10,863	16.1	169	73	92	42	19	31
2005	7,594	12.9	143	61	73	32	17	24
2006	7,276	12.7	144	62	71	31	16	24
2007	7,300	13.1	149	63	75	33	17	25
2008*	6,948	13.4	154	65	73	30	18	25
Arable farming, horticulture, or in combination with livestock								
1995	43,614	3.3	31	10	732	60	43	630
2000	39,055	3.6	34	12	732	64	37	631
2005	32,774	3.5	31	12	716	65	47	605
2006	31,897	3.4	30	12	717	62	50	605
2007	30,031	3.3	30	11	711	61	50	601
2008*	29,075	3.3	30	11	715	60	54	601

1) Cultivated area excluding fallow land, fast gowing timber and green manure crops.
2) Total of permanent and temporary grassland.
3) Including combinations of grazing livestock.
4) Including combinations of pigs and poultry farms.

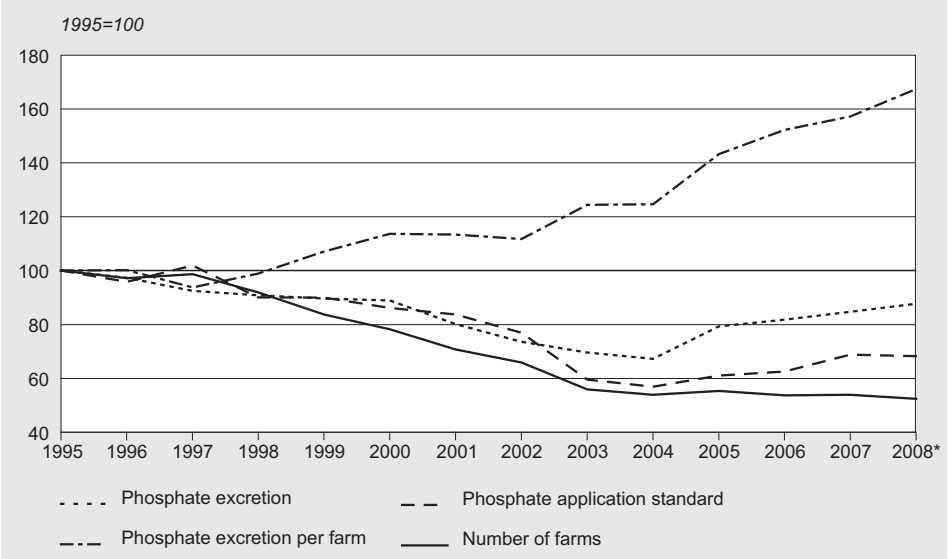
high excretion factors in 2007 and expansion of livestock in 2008. The total level of phosphate placement on all highly specialised dairy farms is just sufficient for the phosphate production of these farms. The application standard for farms with indoor livestock is small compared with manure production. The cultivated area on pig farms provides space for only 10 percent of the manure produced by these companies, expressed as phosphate. For poultry farms this is even less, namely 3 percent.

4. Phosphate excretion of highly specialised dairy farms



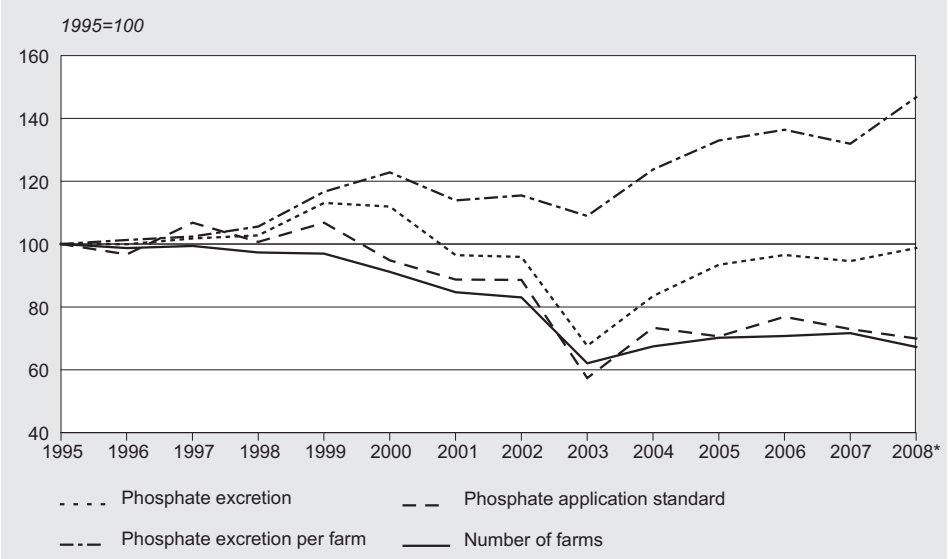
Source: CBS.

5. Phosphate excretion of pig farms



Source: CBS.

6. Phosphate excretion of poultry farms



Source: CBS.

5. Uncertainties

A large number of parameters are involved in the calculation of standard factors for manure production and nutrient excretion per animal. In some cases so little is known about these parameters that assumptions must be made. This is more important in the case of grazing livestock categories – cattle, sheep and goats – than in the case of pigs and poultry. In recent years, the availability of basic information, such as data on feed consumption and feed composition for grazing livestock has decreased significantly. As a result, more assumptions are needed to establish standard factors for the nutrient excretion per animal. This affects the accuracy of the calculated manure production and nutrient excretion in the Netherlands. It also affects the reliability of calculations for which manure production and nutrient excretion are essential, such as the calculations of ammonia emissions and emissions of the greenhouse gases nitrous oxide and methane. More information on developments in the availability of feed data and the observation of the number of animals in the agricultural census is described in the article Dierlijke mest en mineralen 2006.

6. References

Agrovision. Kengetallenspiegel – vleesvarkens en zeugen. Agrovision B.V. Deventer.

BLGG. Bedrijfslaboratorium voor grond- en gewasonderzoek, Oosterbeek. www.blgg.nl

Bruggen C. van, 2003 t/m 2008. Dierlijke mest en nutrienten 2001 t/m 2006. www.cbs.nl

CBS, a. www.cbs.nl – Statline, Landbouwtellingen. CBS, Voorburg / Heerlen.

CBS, b. www.cbs.nl – Statline, Statistiek graslandgebruik. CBS, Voorburg / Heerlen.

CBS, c. www.cbs.nl – Statline, Zuivelstatistiek. CBS, Voorburg / Heerlen.

CBS, 2008. Neg-typering. www.cbs.nl (thema landbouw > methoden > classificaties)

CVB, 2005. Tabellenboek Veevoeding 2005. Centraal Veevoederbureau, Lelystad.

Eerdt, M.M. van, 1995a t/m 1999. Mestproductie en nutrientenuitscheiding, 1993 t/m 1998. Kwartaalbericht Milieustatistieken 1995/2, 1995/4, 1996/4, 1997/4, 1998/4, 1999/4. CBS, Voorburg / Heerlen.

Eerdt M.M. van, 1998b. Mestproductie, nutrientenuitscheiding en nutrienten in de mest, 1997. Maandstatistiek van de Landbouw 1998/12, p. 52–62. CBS, Voorburg / Heerlen.

Eerdt M.M. van, Heijstraten T., Wit A.K.H., 2003. Dierlijke mest en nutrienten, 1998–2001*. www.cbs.nl

Heeres-van der Tol, J.J., 2001. Vaste kengetallen rundvee, schapen en geiten herzien. Intern rapport 455. Praktijkonderzoek Veehouderij, Lelystad.

Heeres-van der Tol, J.J., 2002. Stikstof- en fosfaatuitscheiding rundvee. Praktijkrapport Rundvee nr. 10. Praktijkonderzoek Veehouderij, Lelystad.

Heeres-van der Tol, 2005. Mondelinge mededeling. Animal Sciences Group – Praktijkonderzoek, Lelystad.

Hoek, K.W. van der, 1987. Fosfaatproductienormen voor rundvee, varkens, kippen en kalkoenen. Consulentschap voor Bodem-, Water- en Bemestingszaken in de Veehouderij.

Groenestein, C.M., K.W. van der Hoek, G.J. Monteny, O. Oenema, 2005. Actualisering forfaitaire waarden voor gasvormige N-verliezen uit stallen en mestopslagen van varkens, pluimvee en overige dieren. Rapport no. 465. Agrotechnology and Food Innovations, Wageningen.

Hoogeveen, M.W., H.H. Luesink and C. van Bruggen. Gasvormige stikstofverliezen uit stal en opslag; Verschillen in berekeningsmethoden. Den Haag, LEI, 2006.

Jongbloed, A.W., P.A. Kemme, J.Th.M. van Diepen and J. Kogut, 2002a. De gehalten aan stikstof, fosfor en kalium in varkens vanaf geboorte tot ca. 120 kg lichaamsgewicht en van opfokzeugen. Rapport no. 2222, Lelystad.

Jongbloed, A.W., P.A. Kemme, 2002b. Oriëntatie omtrent de gehalten aan stikstof, fosfor en kalium in landbouwhuisdieren. Rapport ID-Lelystad no. 2178.

Jongbloed, A.W., P.A. Kemme, 2005. De uitscheiding van stikstof en fosfor door varkens, kippen, kalkoenen, pelsdieren, eenden, konijnen en parelhoenders in 2002 en 2006. Rapport 05/I01077. Animal Sciences Group – Nutrition and Food, Lelystad.

Jongbloed, 2009. Mondelinge mededeling.

Kemme, P.A., J. Heeres-van der Tol, G. Smolders, H. Valk, J.D. van der Klis, 2005a. Schatting van de uitscheiding van stikstof en fosfor door diverse categorieën graasdieren. Rapport no. 05/I00653. Animal Sciences Group – Nutrition and Food, Lelystad.

Kemme, P.A., G. Smolders, J.D. van der Klis, 2005b. Schatting van de uitscheiding van stikstof en fosfor door paarden, pony's en ezels Rapport no. 05/I01644. Animal Sciences Group – Nutrition and Food, Lelystad.

LEI-WUR. Bedrijven Informatie Net (BIN). Landbouw-Economisch Instituut (LEI), Den Haag.

Oenema, O., G.L. Velthof, N. Verdoes, P.W.G. Groot Koerkamp, G.J. Monteny, A. Bannink, H.G. van der Meer en K.W. van der Hoek, 2000. Fortaitaire waarden voor gasvormige stikstofverliezen uit stallen en mestopslagen. Alterra (rapport 107, gewijzigde druk, ISSN 1566–7197), Wageningen.

OPNV. Overleggroep Producenten Natte Veevoeders. www.opnv.nl

Tamminga, S., A.W. Jongbloed, M.M. van Eerdt, H.F.M. Aarts, F. Mandersloot, N.J.P. Hoogervorst and H. Westhoek, 2000. De forfaitaire excretie van stikstof door landbouwhuisdieren. Rapport ID Lelystad 00-2040R.

Tamminga,S., F. Aarts, A. Bannink, O. Oenema, G.J. Monteny, 2004. Actualisering van geschatte N en P excreties door rundvee. Reeks Milieu en Landelijk gebied 25. Wageningen.

Velthof, G.L., van Bruggen, C., Groenestein, C.M., de Haan, B.J. Hoogeveen, M.W., Huijsmans, J.F.M., 2009. Methodiek voor berekening van ammoniakemissie uit de landbouw in Nederland. WOt-rapport 70, Wageningen.

Versteegh, H.A.J., Jongbloed, A.W., 1999. De hoeveelheid droge stof, as, stikstof, calcium. Magnesium, fosfor, natrium, kalium, koper, zink en ijzer in eieren en in vleeskuikenouderdieren op twee leeftijden. Rapport ID-DLO no. 99.059.

WUM, 1994a. Uniformering berekening mest en nutrienten. Standaardcijfers rundvee, schapen en geiten, 1990 t/m 1992. Werkgroep Uniformering berekening mest- en nutrientencijfers (redactie M.M. van Eerdt). CBS, IKC-Veehouderij, LAMI, LEI-DLO, RIVM en SLM.

WUM, 1994b. Uniformering berekening mest en nutrienten. Standaardcijfers varkens, 1990 t/m 1992. Werkgroep Uniformering berekening mest- en nutrientencijfers (redactie M.M. van Eerdt). CBS, IKC-Veehouderij, LAMI, LEI-DLO, RIVM en SLM.

WUM, 1994c. Uniformering berekening mest en nutrienten. Standaardcijfers pluimvee, konijnen en pelsdieren, 1990 t/m 1992. Werkgroep Uniformering berekening mest- en nutrientencijfers (redactie M.M. van Eerdt). CBS, IKC-Veehouderij, LAMI, LEI-DLO, RIVM en SLM.

7. Tables

Table 6
Manure production and nutrient excretion factors of cattle, sheep and goats, 1990

Section of the agricultural census	Manure quantity			Nutrient excretion								
	liquid manure		solid manure	indoor season			grazing season			full year		
	indoor season	grazing season[1]	(indoor season)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
South and East Netherlands (maize silage diet)	*kg/animal*											
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		25.4	6.6	29.3	14.7	2.9	15.9	40.1	9.5	45.2
female cattle 1 year and older	6,000	5,500		42.0	11.1	48.2	51.2	10.6	54.1	93.2	21.7	102.3
dairy cows	10,000	13,000		58.4	19.8	58.3	83.2	21.2	90.6	141.6	41.0	148.9
of which:												
storage	10,000	6,000		58.4	19.8	58.3	33.3	8.5	36.2	91.7	28.3	94.5
pasture		7,000					49.9	12.7	54.4	49.9	12.7	54.4
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		25.4	6.6	29.3	14.7	2.9	15.9	40.1	9.5	45.2
female cattle 1 year and older	6,000	5,500		42.0	11.1	48.2	51.2	10.6	54.1	93.2	21.7	102.3
North and West Netherlands (grass silage diet)												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		28.1	6.7	32.4	16.2	3.1	17.6	44.3	9.8	50.0
female cattle 1 year and older	6,000	5,500		44.7	11.2	51.8	51.2	10.6	54.1	95.9	21.8	105.9
dairy cows	10,000	13,000		63.8	19.6	68.6	93.2	22.5	99.4	157.0	42.1	168.0
of which:												
storage	10,000	6,000		63.8	19.6	68.6	37.3	9.0	39.8	101.1	28.6	108.4
pasture		7,000					55.9	13.5	59.6	55.9	13.5	59.6
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		27.9	6.6	32.3	16.2	3.1	17.6	44.1	9.7	49.9
female cattle 1 year and older	6,000	5,500		44.7	11.2	51.8	51.2	10.6	54.1	95.9	21.8	105.9
Netherlands												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		26.5	6.6	30.6	15.3	3.0	16.6	41.8	9.6	47.2
male cattle younger than 1 year	5,000									39.6	9.1	48.5
female cattle, 1–2 years	6,000	5,500		43.1	11.1	49.7	51.2	10.6	54.1	94.3	21.7	103.8
male cattle, 1–2 years	11,500									90.6	23.5	102.6
female cattle, 2 years and older	6,000	5,500		43.0	11.1	49.5	51.2	10.6	54.1	94.2	21.7	103.6
dairy cows	10,000	13,000		60.8	19.7	63.0	87.7	21.8	94.6	148.5	41.5	157.6
of which:												
storage	10,000	6,000		60.8	19.7	63.0	35.1	8.7	37.8	95.9	28.4	100.8
pasture		7,000					52.6	13.1	56.8	52.6	13.1	56.8
bulls, 2 years and older	11,500									90.6	23.5	102.6
Cattle for meat												
white-veal calves	3,500									10.6	4.3	11.2
rosé-veal calves	5,000									0.0	0.0	0.0
female cattle younger than 1 year	3,500	1,500		26.2	6.6	30.3	15.2	3.0	16.5	41.4	9.6	46.8
male cattle (incl. oxes) younger than 1 year	4,500									28.9	8.9	29.4
female cattle, 1–2 years	6,000	5,500		43.0	11.1	49.5	51.2	10.6	54.1	94.2	21.7	103.6
male cattle (incl. oxes), 1–2 years	10,000									72.6	23.0	57.0
female cattle, 2 years and older	6,000	5,500		43.1	11.1	49.7	51.2	10.6	54.1	94.3	21.7	103.8
male cattle (incl. oxes), 2 years and older	10,000									72.6	23.0	57.0
fattening cows and meadow cows, 2 years and older		8,000	7,000	42.3	11.7	48.0	68.4	14.4	73.6	110.7	26.1	121.6
suckler cows		8,000	7,000	42.3	11.7	48.0	68.4	14.4	73.6	110.7	26.1	121.6
Sheep [2]		2,000	325	3.9	1.1	4.6	21.1	4.5	23.0	25.0	5.6	27.6
Milch goats [2]			1,300							19.9	6.1	20.7

[1] Only relevant for grazing livestock. All pasture manure is regarded as liquid manure.
[2] Excretion per mother, including the excretion of lambs, male animals and animals raised for breeding.

Table 7
Manure production and nutrient excretion factors of cattle, sheep and goats, 1991

Section of the agricultural census	Manure quantity			Nutrient excretion								
	liquid manure		solid manure	indoor season			grazing season			full year		
	indoor season	grazing season[1]	(indoor season)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
South and East Netherlands (maize silage diet)	*kg/animal*											
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		27.3	7.3	33.4	14.1	2.5	16.6	41.4	9.8	50.0
female cattle 1 year and older	6,000	5,500		45.6	12.6	56.2	49.1	9.2	56.1	94.7	21.8	112.3
dairy cows	10,000	13,000		62.6	21.2	67.5	86.2	20.0	100.2	148.8	41.2	167.7
of which:												
storage	10,000	6,000		62.6	21.2	67.5	34.5	8.0	40.1	97.1	29.2	107.6
pasture		7,000					51.7	12.0	60.1	51.7	12.0	60.1
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		27.3	7.3	33.4	14.1	2.5	16.6	41.4	9.8	50.0
female cattle 1 year and older	6,000	5,500		45.6	12.6	56.2	49.1	9.2	56.1	94.7	21.8	112.3
North and West Netherlands (grass silage diet)												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		30.7	7.7	37.9	15.6	2.7	18.3	46.3	10.4	56.2
female cattle 1 year and older	6,000	5,500		49.0	13.0	61.2	49.1	9.2	56.1	98.1	22.2	117.3
dairy cows	10,000	13,000		70.3	21.9	82.0	93.0	20.7	106.7	163.3	42.6	188.7
of which:												
storage	10,000	6,000		70.3	21.9	82.0	37.2	8.3	42.7	107.5	30.2	124.7
pasture		7,000					55.8	12.4	64.0	55.8	12.4	64.0
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		30.6	7.6	37.9	15.6	2.7	18.3	46.2	10.3	56.2
female cattle 1 year and older	6,000	5,500		49.0	13.0	61.2	49.1	9.2	56.1	98.1	22.2	117.3
Netherlands												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		28.7	7.5	35.2	14.7	2.6	17.3	43.4	10.1	52.5
male cattle younger than 1 year	5,000									40.4	9.3	52.6
female cattle, 1–2 years	6,000	5,500		47.0	12.8	58.3	49.1	9.2	56.1	96.1	22.0	114.4
male cattle, 1–2 years	11,500									99.1	27.1	121.3
female cattle, 2 years and older	6,000	5,500		46.9	12.8	58.1	49.1	9.2	56.1	96.0	22.0	114.2
dairy cows	10,000	13,000		66.1	21.5	74.1	89.3	20.3	103.2	155.4	41.8	177.3
of which:												
storage	10,000	6,000		66.1	21.5	74.1	35.7	8.1	41.3	101.8	29.6	115.4
pasture		7,000					53.6	12.2	61.9	53.6	12.2	61.9
bulls, 2 years and older	11,500									99.1	27.1	121.3
Cattle for meat												
white-veal calves	3,500									10.6	4.3	11.2
rosé-veal calves	5,000									0.0	0.0	0.0
female cattle younger than 1 year	3,500	1,500		28.4	7.4	34.9	14.6	2.6	17.2	43.0	10.0	52.1
male cattle (incl. oxes) younger than 1 year	4,500									29.9	9.0	29.9
female cattle, 1–2 years	6,000	5,500		46.8	12.7	58.0	49.1	9.2	56.1	95.9	21.9	114.1
male cattle (incl. oxes), 1–2 years	10,000									79.3	24.4	59.5
female cattle, 2 years and older	6,000	5,500		47.0	12.8	58.3	49.1	9.2	56.1	96.1	22.0	114.4
male cattle (incl. oxes), 2 years and older	10,000									79.3	24.4	59.5
fattening cows and meadow cows, 2 years and older		8,000	7,000	46.3	13.3	56.7	65.4	12.5	76.5	111.7	25.8	133.2
suckler cows		8,000	7,000	46.3	13.3	56.7	65.4	12.5	76.5	111.7	25.8	133.2
Sheep[2]		2,000	325	4.0	1.2	5.2	20.7	4.1	24.3	24.7	5.3	29.5
Milch goats[2]			1,300							20.9	6.5	23.2

[1] Only relevant for grazing livestock. All pasture manure is regarded as liquid manure.
[2] Excretion per mother, including the excretion of lambs, male animals and animals raised for breeding.

Table 8
Manure production and nutrient excretion factors of cattle, sheep and goats, 1992

Section of the agricultural census	Manure quantity			Nutrient excretion								
	liquid manure		solid manure	indoor season			grazing season			full year		
	indoor season	grazing season[1]	(indoor season)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
South and East Netherlands (maize silage diet)	*kg/animal*											
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		27.1	6.8	34.1	13.9	2.6	16.0	41.0	9.4	50.1
female cattle 1 year and older	6,000	5,500		45.0	12.2	58.0	48.0	9.8	54.1	93.0	22.0	112.1
dairy cows	10,000	13,000		56.7	18.2	60.8	91.3	21.5	103.0	148.0	39.7	163.8
of which:												
storage	10,000	6,000		56.7	18.2	60.8	36.5	8.6	41.2	93.2	26.8	102.0
pasture		7,000					54.8	12.9	61.8	54.8	12.9	61.8
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		27.1	6.8	34.1	13.9	2.6	16.0	41.0	9.4	50.1
female cattle 1 year and older	6,000	5,500		45.0	12.2	58.0	48.0	9.8	54.1	93.0	22.0	112.1
North and West Netherlands (grass silage diet)												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		30.4	7.6	39.1	15.3	2.9	17.6	45.7	10.5	56.7
female cattle 1 year and older	6,000	5,500		48.2	12.8	63.4	48.0	9.8	54.1	96.2	22.6	117.5
dairy cows	10,000	13,000		62.7	19.7	73.3	101.8	23.5	114.5	164.5	43.2	187.8
of which:												
storage	10,000	6,000		62.7	19.7	73.3	40.7	9.4	45.8	103.4	29.1	119.1
pasture		7,000					61.1	14.1	68.7	61.1	14.1	68.7
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		30.2	7.5	39.1	15.3	2.9	17.6	45.5	10.4	56.7
female cattle 1 year and older	6,000	5,500		48.2	12.8	63.4	48.0	9.8	54.1	96.2	22.6	117.5
Netherlands												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		28.4	7.1	36.1	14.5	2.7	16.7	42.9	9.8	52.8
male cattle younger than 1 year	5,000									40.0	8.3	52.2
female cattle, 1–2 years	6,000	5,500		46.3	12.4	60.2	48.0	9.8	54.1	94.3	22.2	114.3
male cattle, 1–2 years	11,500									97.6	26.7	125.5
female cattle, 2 years and older	6,000	5,500		46.3	12.4	60.1	48.0	9.8	54.1	94.3	22.2	114.2
dairy cows	10,000	13,000		59.4	18.9	66.4	96.0	22.4	108.2	155.4	41.3	174.6
of which:												
storage	10,000	6,000		59.4	18.9	66.4	38.4	9.0	43.3	97.8	27.9	109.7
pasture		7,000					57.6	13.4	64.9	57.6	13.4	64.9
bulls, 2 years and older	11,500									97.6	26.7	125.5
Cattle for meat												
white-veal calves	3,500									10.6	4.3	11.2
rosé-veal calves	5,000									0.0	0.0	0.0
female cattle younger than 1 year	3,500	1,500		28.2	7.0	35.8	14.4	2.7	16.6	42.6	9.7	52.4
male cattle (incl. oxes) younger than 1 year	4,500									29.4	8.6	28.2
female cattle, 1–2 years	6,000	5,500		46.2	12.4	60.0	48.0	9.8	54.1	94.2	22.2	114.1
male cattle (incl. oxes), 1–2 years	10,000									81.8	25.5	59.6
female cattle, 2 years and older	6,000	5,500		46.4	12.5	60.3	48.0	9.8	54.1	94.4	22.3	114.4
male cattle (incl. oxes), 2 years and older	10,000									81.8	25.5	59.6
fattening cows and meadow cows, 2 years and older		8,000	7,000	45.7	13.2	58.6	63.9	13.2	73.6	109.6	26.4	132.2
suckler cows		8,000	7,000	45.7	13.2	58.6	63.9	13.2	73.6	109.6	26.4	132.2
Sheep[2]		2,000	325	3.9	1.1	5.2	19.7	4.2	22.9	23.6	5.3	28.1
Milch goats[2]			1,300							20.4	6.3	23.3

1) Only relevant for grazing livestock. All pasture manure is regarded as liquid manure.
2) Excretion per mother, including the excretion of lambs, male animals and animals raised for breeding.

Table 9
Manure production and nutrient excretion factors of cattle, sheep and goats, 1993

Section of the agricultural census	Manure quantity			Nutrient excretion								
	liquid manure		solid manure	indoor season			grazing season			full year		
	indoor season	grazing season[1]	(indoor season)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
South and East Netherlands (maize silage diet)	*kg/animal*											
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		27.4	7.1	33.8	13.9	3.0	17.4	41.3	10.1	51.2
female cattle 1 year and older	6,000	5,500		45.4	12.6	57.8	48.1	11.0	59.0	93.5	23.6	116.8
dairy cows	10,000	13,000		60.5	20.6	63.0	86.7	22.9	105.9	147.2	43.5	168.9
of which:												
storage	10,000	6,000		60.5	20.6	63.0	34.7	9.2	42.4	95.2	29.8	105.4
pasture		7,000					52.0	13.7	63.5	52.0	13.7	63.5
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		27.4	7.1	33.8	13.9	3.0	17.4	41.3	10.1	51.2
female cattle 1 year and older	6,000	5,500		45.4	12.6	57.8	48.1	11.0	59.0	93.5	23.6	116.8
North and West Netherlands (grass silage diet)												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		30.7	7.9	39.3	15.4	3.3	19.2	46.1	11.2	58.5
female cattle 1 year and older	6,000	5,500		48.6	13.2	63.5	48.1	11.0	59.0	96.7	24.2	122.5
dairy cows	10,000	13,000		70.8	22.5	84.6	92.8	24.2	113.9	163.6	46.7	198.5
of which:												
storage	10,000	6,000		70.8	22.5	84.6	37.1	9.7	45.6	107.9	32.2	130.2
pasture		7,000					55.7	14.5	68.3	55.7	14.5	68.3
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		30.5	7.7	39.2	15.4	3.3	19.2	45.9	11.0	58.4
female cattle 1 year and older	6,000	5,500		48.6	13.2	63.5	48.1	11.0	59.0	96.7	24.2	122.5
Netherlands												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		28.7	7.4	36.0	14.5	3.1	18.1	43.2	10.5	54.1
male cattle younger than 1 year	5,000									40.2	9.1	52.5
female cattle, 1–2 years	6,000	5,500		46.7	12.8	60.2	48.1	11.0	59.0	94.8	23.8	119.2
male cattle, 1–2 years	11,500									98.2	27.5	125.7
female cattle, 2 years and older	6,000	5,500		46.6	12.8	60.0	48.1	11.0	59.0	94.7	23.8	119.0
dairy cows	10,000	13,000		65.1	21.5	72.7	89.5	23.5	109.5	154.6	45.0	182.2
of which:												
storage	10,000	6,000		65.1	21.5	72.7	35.8	9.4	43.8	100.9	30.9	116.5
pasture		7,000					53.7	14.1	65.7	53.7	14.1	65.7
bulls, 2 years and older	11,500									98.2	27.5	125.7
Cattle for meat												
white-veal calves	3,500									10.6	4.3	11.2
rosé-veal calves	5,000									0.0	0.0	0.0
female cattle younger than 1 year	3,500	1,500		28.5	7.3	35.7	14.4	3.1	18.0	42.9	10.4	53.7
male cattle (incl. oxes) younger than 1 year	4,500									27.8	8.0	27.5
female cattle, 1–2 years	6,000	5,500		46.6	12.8	59.9	48.1	11.0	59.0	94.7	23.8	118.9
male cattle (incl. oxes), 1–2 years	10,000									84.1	27.2	67.4
female cattle, 2 years and older	6,000	5,500		46.7	12.9	60.2	48.1	11.0	59.0	94.8	23.9	119.2
male cattle (incl. oxes), 2 years and older	10,000									84.1	27.2	67.4
fattening cows and meadow cows, 2 years and older		8,000	7,000	46.2	13.6	58.8	64.0	14.9	80.5	110.2	28.5	139.3
suckler cows		8,000	7,000	46.2	13.6	58.8	64.0	14.9	80.5	110.2	28.5	139.3
Sheep[2]		2,000	325	4.0	1.2	5.3	20.2	4.8	25.5	24.2	6.0	30.8
Milch goats[2]			1,300							21.1	6.6	24.0

[1] Only relevant for grazing livestock. All pasture manure is regarded as liquid manure.
[2] Excretion per mother, including the excretion of lambs, male animals and animals raised for breeding.

Table 10
Manure production and nutrient excretion factors of cattle, sheep and goats, 1994

Section of the agricultural census	Manure quantity			Nutrient excretion								
	liquid manure		solid manure	indoor season			grazing season			full year		
	indoor season	grazing season[1]	(indoor season)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
South and East Netherlands (maize silage diet)	*kg/animal*											
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		28.4	7.5	37.6	13.8	2.7	16.3	42.2	10.2	53.9
female cattle 1 year and older	6,000	5,500		47.9	13.2	65.4	47.8	10.0	55.2	95.7	23.2	120.6
dairy cows	10,000	13,000		65.5	22.0	72.2	78.3	20.8	93.0	143.8	42.8	165.2
of which:												
storage	10,000	6,000		65.5	22.0	72.2	31.3	8.3	37.2	96.8	30.3	109.4
pasture		7,000					47.0	12.5	55.8	47.0	12.5	55.8
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		28.4	7.5	37.6	13.8	2.7	16.3	42.2	10.2	53.9
female cattle 1 year and older	6,000	5,500		47.9	13.2	65.4	47.8	10.0	55.2	95.7	23.2	120.6
North and West Netherlands (grass silage diet)												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		32.3	8.2	44.1	15.2	3.0	18.0	47.5	11.2	62.1
female cattle 1 year and older	6,000	5,500		51.7	13.8	72.2	47.8	10.0	55.2	99.5	23.8	127.4
dairy cows	10,000	13,000		72.7	23.2	91.7	92.7	23.0	109.3	165.4	46.2	201.0
of which:												
storage	10,000	6,000		72.7	23.2	91.7	37.1	9.2	43.7	109.8	32.4	135.4
pasture		7,000					55.6	13.8	65.6	55.6	13.8	65.6
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		32.1	8.1	44.1	15.2	3.0	18.0	47.3	11.1	62.1
female cattle 1 year and older	6,000	5,500		51.7	13.8	72.2	47.8	10.0	55.2	99.5	23.8	127.4
Netherlands												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		30.0	7.8	40.3	14.4	2.8	17.0	44.4	10.6	57.3
male cattle younger than 1 year	5,000									41.7	9.6	56.1
female cattle, 1–2 years	6,000	5,500		49.5	13.5	68.2	47.8	10.0	55.2	97.3	23.5	123.4
male cattle, 1–2 years	11,500									104.5	28.7	143.0
female cattle, 2 years and older	6,000	5,500		49.4	13.4	68.0	47.8	10.0	55.2	97.2	23.4	123.2
dairy cows	10,000	13,000		68.8	22.5	81.0	84.8	21.8	100.3	153.6	44.3	181.3
of which:												
storage	10,000	6,000		68.8	22.5	81.0	33.9	8.7	40.1	102.7	31.2	121.1
pasture		7,000					50.9	13.1	60.2	50.9	13.1	60.2
bulls, 2 years and older	11,500									104.5	28.7	143.0
Cattle for meat												
white-veal calves	3,500									10.6	4.3	11.2
rosé-veal calves	5,000									0.0	0.0	0.0
female cattle younger than 1 year	3,500	1,500		29.7	7.7	39.8	14.3	2.8	16.9	44.0	10.5	56.7
male cattle (incl. oxes) younger than 1 year	4,500									30.4	10.0	29.5
female cattle, 1–2 years	6,000	5,500		49.3	13.4	67.9	47.8	10.0	55.2	97.1	23.4	123.1
male cattle (incl. oxes), 1–2 years	10,000									71.5	22.8	49.3
female cattle, 2 years and older	6,000	5,500		49.4	13.4	68.1	47.8	10.0	55.2	97.2	23.4	123.3
male cattle (incl. oxes), 2 years and older	10,000									71.5	22.8	49.3
fattening cows and meadow cows, 2 years and older		8,000	7,000	48.7	14.1	66.5	63.7	13.5	75.2	112.4	27.6	141.7
suckler cows		8,000	7,000	48.7	14.1	66.5	63.7	13.5	75.2	112.4	27.6	141.7
Sheep[2]		2,000	325	4.2	1.2	6.0	20.3	4.4	24.2	24.5	5.6	30.2
Milch goats[2]			1,300							21.6	6.8	26.5

[1] Only relevant for grazing livestock. All pasture manure is regarded as liquid manure.
[2] Excretion per mother, including the excretion of lambs, male animals and animals raised for breeding.

Table 11
Manure production and nutrient excretion factors of cattle, sheep and goats, 1995

Section of the agricultural census	Manure quantity			Nutrient excretion								
	liquid manure		solid manure	indoor season			grazing season			full year		
	indoor season	grazing season[1]	(indoor season)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
South and East Netherlands (maize silage diet)	*kg/animal*											
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		28.3	7.5	35.8	13.8	2.5	15.8	42.1	10.0	51.6
female cattle 1 year and older	6,000	5,500		47.0	13.2	61.7	47.5	9.4	53.5	94.5	22.6	115.2
dairy cows	10,000	13,000		66.2	21.6	65.2	83.2	21.0	93.7	149.4	42.6	158.9
of which:												
storage	10,000	6,000		66.2	21.6	65.2	33.3	8.4	37.5	99.5	30.0	102.7
pasture		7,000					49.9	12.6	56.2	49.9	12.6	56.2
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		28.3	7.5	35.8	13.8	2.5	15.8	42.1	10.0	51.6
female cattle 1 year and older	6,000	5,500		47.0	13.2	61.7	47.5	9.4	53.5	94.5	22.6	115.2
North and West Netherlands (grass silage diet)												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		31.8	8.3	41.6	15.2	2.8	17.4	47.0	11.1	59.0
female cattle 1 year and older	6,000	5,500		50.4	13.9	67.8	47.5	9.4	53.5	97.9	23.3	121.3
dairy cows	10,000	13,000		72.3	23.5	82.2	92.7	22.3	102.4	165.0	45.8	184.6
of which:												
storage	10,000	6,000		72.3	23.5	82.2	37.1	8.9	41.0	109.4	32.4	123.2
pasture		7,000					55.6	13.4	61.4	55.6	13.4	61.4
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		31.6	8.2	41.5	15.2	2.8	17.4	46.8	11.0	58.9
female cattle 1 year and older	6,000	5,500		50.4	13.9	67.8	47.5	9.4	53.5	97.9	23.3	121.3
Netherlands												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		29.8	7.8	38.2	14.4	2.6	16.5	44.2	10.4	54.7
male cattle younger than 1 year	5,000									40.8	9.0	53.4
female cattle, 1–2 years	6,000	5,500		48.4	13.5	64.3	47.5	9.4	53.5	95.9	22.9	117.8
male cattle, 1–2 years	11,500									101.9	28.8	134.2
female cattle, 2 years and older	6,000	5,500		48.4	13.5	64.1	47.5	9.4	53.5	95.9	22.9	117.6
dairy cows	10,000	13,000		69.0	22.5	72.9	87.5	21.6	97.7	156.5	44.1	170.6
of which:												
storage	10,000	6,000		69.0	22.5	72.9	35.0	8.6	39.1	104.0	31.1	112.0
pasture		7,000					52.5	13.0	58.6	52.5	13.0	58.6
bulls, 2 years and older	11,500									101.9	28.8	134.2
Cattle for meat												
white-veal calves	3,500									11.6	4.6	13.5
rosé-veal calves	5,000									28.9	9.3	28.3
female cattle younger than 1 year	3,500	1,500		29.4	7.7	37.7	14.3	2.6	16.3	43.7	10.3	54.0
male cattle (incl. oxes) younger than 1 year	4,500									29.5	9.0	31.8
female cattle, 1–2 years	6,000	5,500		48.2	13.5	63.9	47.5	9.4	53.5	95.7	22.9	117.4
male cattle (incl. oxes), 1–2 years	10,000									64.7	20.9	56.2
female cattle, 2 years and older	6,000	5,500		48.4	13.5	64.2	47.5	9.4	53.5	95.9	22.9	117.7
male cattle (incl. oxes), 2 years and older	10,000									64.7	20.9	56.2
fattening cows and meadow cows, 2 years and older		8,000	7,000	48.0	14.2	62.5	63.1	12.7	72.8	111.1	26.9	135.3
suckler cows		8,000	7,000	48.0	14.2	62.5	63.1	12.7	72.8	111.1	26.9	135.3
Sheep[2]		2,000	325	4.0	1.2	5.5	20.3	4.2	23.5	24.3	5.4	29.0
Milch goats[2]			1,300							21.5	6.8	24.5

[1] Only relevant for grazing livestock. All pasture manure is regarded as liquid manure.
[2] Excretion per mother, including the excretion of lambs, male animals and animals raised for breeding.

Table 12
Manure production and nutrient excretion factors of cattle, sheep and goats, 1996

Section of the agricultural census	Manure quantity			Nutrient excretion								
	liquid manure		solid manure	indoor season			grazing season			full year		
	indoor season	grazing season[1]	(indoor season)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
South and East Netherlands (maize silage diet)	*kg/animal*											
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		26.5	6.6	33.9	14.4	2.1	15.9	40.9	8.7	49.8
female cattle 1 year and older	6,000	5,500		43.7	11.7	57.9	50.1	8.0	54.1	93.8	19.7	112.0
dairy cows	10,000	13,000		60.5	19.5	62.7	91.7	19.1	99.8	152.2	38.6	162.5
of which:												
storage	10,000	6,000		60.5	19.5	62.7	36.7	7.6	39.9	97.2	27.1	102.6
pasture		7,000					55.0	11.5	59.9	55.0	11.5	59.9
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		26.5	6.6	33.9	14.4	2.1	15.9	40.9	8.7	49.8
female cattle 1 year and older	6,000	5,500		43.7	11.7	57.9	50.1	8.0	54.1	93.8	19.7	112.0
North and West Netherlands (grass silage diet)												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		29.6	7.3	39.0	15.9	2.3	17.6	45.5	9.6	56.6
female cattle 1 year and older	6,000	5,500		46.8	12.3	63.4	50.1	8.0	54.1	96.9	20.3	117.5
dairy cows	10,000	13,000		68.0	21.2	78.6	95.2	20.0	105.3	163.2	41.2	183.9
of which:												
storage	10,000	6,000		68.0	21.2	78.6	38.1	8.0	42.1	106.1	29.2	120.7
pasture		7,000					57.1	12.0	63.2	57.1	12.0	63.2
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		29.4	7.1	39.0	15.9	2.3	17.6	45.3	9.4	56.6
female cattle 1 year and older	6,000	5,500		46.8	12.3	63.4	50.1	8.0	54.1	96.9	20.3	117.5
Netherlands												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		27.8	6.9	36.0	15.0	2.2	16.6	42.8	9.1	52.6
male cattle younger than 1 year	5,000									39.6	7.7	51.9
female cattle, 1–2 years	6,000	5,500		45.0	12.0	60.2	50.1	8.0	54.1	95.1	20.0	114.3
male cattle, 1–2 years	11,500									94.7	25.6	125.6
female cattle, 2 years and older	6,000	5,500		45.0	11.9	60.1	50.1	8.0	54.1	95.1	19.9	114.2
dairy cows	10,000	13,000		63.9	20.3	69.9	93.3	19.5	102.3	157.2	39.8	172.2
of which:												
storage	10,000	6,000		63.9	20.3	69.9	37.3	7.8	40.9	101.2	28.1	110.8
pasture		7,000					56.0	11.7	61.4	56.0	11.7	61.4
bulls, 2 years and older	11,500									94.7	25.6	125.6
Cattle for meat												
white-veal calves	3,500									11.4	4.0	13.5
rosé-veal calves	5,000									29.3	9.1	27.9
female cattle younger than 1 year	3,500	1,500		27.5	6.8	35.6	14.9	2.2	16.5	42.4	9.0	52.1
male cattle (incl. oxes) younger than 1 year	4,500									28.4	8.0	30.8
female cattle, 1–2 years	6,000	5,500		44.8	11.9	59.8	50.1	8.0	54.1	94.9	19.9	113.9
male cattle (incl. oxes), 1–2 years	10,000									63.6	19.8	50.1
female cattle, 2 years and older	6,000	5,500		45.0	11.9	60.2	50.1	8.0	54.1	95.1	19.9	114.3
male cattle (incl. oxes), 2 years and older	10,000									63.6	19.8	50.1
fattening cows and meadow cows, 2 years and older		8,000	7,000	44.5	12.7	58.5	66.7	10.8	73.6	111.2	23.5	132.1
suckler cows		8,000	7,000	44.5	12.7	58.5	66.7	10.8	73.6	111.2	23.5	132.1
Sheep[2]		2,000	325	3.9	1.1	5.4	21.9	3.7	24.3	25.8	4.8	29.7
Milch goats[2]			1,300							20.7	6.2	23.9

[1] Only relevant for grazing livestock. All pasture manure is regarded as liquid manure.
[2] Excretion per mother, including the excretion of lambs, male animals and animals raised for breeding.

Table 13
Manure production and nutrient excretion factors of cattle, sheep and goats, 1997

Section of the agricultural census	Manure quantity			Nutrient excretion								
	liquid manure		solid manure	indoor season			grazing season			full year		
	indoor season	grazing season[1]	(indoor season)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
South and East Netherlands (maize silage diet)	*kg/animal*											
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		29.0	6.5	35.4	14.3	2.7	16.1	43.3	9.2	51.5
female cattle 1 year and older	6,000	5,500		49.5	11.5	61.8	49.8	10.0	54.9	99.3	21.5	116.7
dairy cows	10,000	13,000		59.0	19.2	60.9	84.0	20.8	94.7	143.0	40.0	155.6
of which:												
storage	10,000	6,000		59.0	19.2	60.9	33.6	8.3	37.9	92.6	27.5	98.8
pasture		7,000					50.4	12.5	56.8	50.4	12.5	56.8
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		29.0	6.5	35.4	14.3	2.7	16.1	43.3	9.2	51.5
female cattle 1 year and older	6,000	5,500		49.5	11.5	61.8	49.8	10.0	54.9	99.3	21.5	116.7
North and West Netherlands (grass silage diet)												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		33.4	7.1	41.7	15.8	3.0	17.8	49.2	10.1	59.5
female cattle 1 year and older	6,000	5,500		53.7	12.0	68.3	49.8	10.0	54.9	103.5	22.0	123.2
dairy cows	10,000	13,000		71.0	20.6	80.7	95.3	22.5	104.7	166.3	43.1	185.4
of which:												
storage	10,000	6,000		71.0	20.6	80.7	38.1	9.0	41.9	109.1	29.6	122.6
pasture		7,000					57.2	13.5	62.8	57.2	13.5	62.8
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		33.2	7.0	41.7	15.8	3.0	17.8	49.0	10.0	59.5
female cattle 1 year and older	6,000	5,500		53.7	12.0	68.3	49.8	10.0	54.9	103.5	22.0	123.2
Netherlands												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		30.9	6.8	38.1	14.9	2.8	16.8	45.8	9.6	54.9
male cattle younger than 1 year	5,000									41.6	8.2	52.9
female cattle, 1–2 years	6,000	5,500		51.3	11.7	64.6	49.8	10.0	54.9	101.1	21.7	119.5
male cattle, 1–2 years	11,500									108.5	25.0	135.3
female cattle, 2 years and older	6,000	5,500		51.2	11.7	64.5	49.8	10.0	54.9	101.0	21.7	119.4
dairy cows	10,000	13,000		64.5	19.8	69.9	89.1	21.6	99.2	153.6	41.4	169.1
of which:												
storage	10,000	6,000		64.5	19.8	69.9	35.6	8.6	39.7	100.1	28.4	109.6
pasture		7,000					53.5	13.0	59.5	53.5	13.0	59.5
bulls, 2 years and older	11,500									108.5	25.0	135.3
Cattle for meat												
white-veal calves	3,500									10.3	4.1	13.4
rosé-veal calves	5,000									27.9	9.0	27.3
female cattle younger than 1 year	3,500	1,500		30.4	6.7	37.5	14.8	2.8	16.7	45.2	9.5	54.2
male cattle (incl. oxes) younger than 1 year	4,500									28.0	8.5	30.3
female cattle, 1–2 years	6,000	5,500		50.9	11.7	64.0	49.8	10.0	54.9	100.7	21.7	118.9
male cattle (incl. oxes), 1–2 years	10,000									59.0	18.9	50.9
female cattle, 2 years and older	6,000	5,500		51.1	11.7	64.2	49.8	10.0	54.9	100.9	21.7	119.1
male cattle (incl. oxes), 2 years and older	10,000									59.0	18.9	50.9
fattening cows and meadow cows, 2 years and older		8,000	7,000	50.5	12.4	62.7	66.4	13.6	74.8	116.9	26.0	137.5
suckler cows		8,000	7,000	50.5	12.4	62.7	66.4	13.6	74.8	116.9	26.0	137.5
Sheep [2]		2,000	325	4.4	1.1	5.8	21.0	4.4	23.9	25.4	5.5	29.7
Milch goats [2]			1,300							22.0	6.1	24.7

[1] Only relevant for grazing livestock. All pasture manure is regarded as liquid manure.
[2] Excretion per mother, including the excretion of lambs, male animals and animals raised for breeding.

Table 14
Manure production and nutrient excretion factors of cattle, sheep and goats, 1998

Section of the agricultural census	Manure quantity			Nutrient excretion								
	liquid manure		solid manure	indoor season			grazing season			full year		
	indoor season	grazing season[1]	(indoor season)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
South and East Netherlands (maize silage diet)	*kg/animal*											
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		28.2	7.1	35.7	13.6	2.6	15.9	41.8	9.7	51.6
female cattle 1 year and older	6,000	5,500		48.3	13.1	62.6	47.3	10.0	54.2	95.6	23.1	116.8
dairy cows	10,000	13,000		66.4	21.1	71.7	58.3	16.2	72.0	124.7	37.3	143.7
of which:												
storage	10,000	6,000		66.4	21.1	71.7	23.3	6.5	28.8	89.7	27.6	100.5
pasture		7,000					35.0	9.7	43.2	35.0	9.7	43.2
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		28.2	7.1	35.7	13.6	2.6	15.9	41.8	9.7	51.6
female cattle 1 year and older	6,000	5,500		48.3	13.1	62.6	47.3	10.0	54.2	95.6	23.1	116.8
North and West Netherlands (grass silage diet)												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		32.5	8.1	42.3	15.0	2.9	17.6	47.5	11.0	59.9
female cattle 1 year and older	6,000	5,500		52.4	14.0	69.5	47.3	10.0	54.2	99.7	24.0	123.7
dairy cows	10,000	13,000		74.8	23.3	86.8	81.3	20.3	96.0	156.1	43.6	182.8
of which:												
storage	10,000	6,000		74.8	23.3	86.8	32.5	8.1	38.4	107.3	31.4	125.2
pasture		7,000					48.8	12.2	57.6	48.8	12.2	57.6
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		32.3	7.9	42.3	15.0	2.9	17.6	47.3	10.8	59.9
female cattle 1 year and older	6,000	5,500		52.4	14.0	69.5	47.3	10.0	54.2	99.7	24.0	123.7
Netherlands												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		30.1	7.5	38.5	14.2	2.7	16.6	44.3	10.2	55.1
male cattle younger than 1 year	5,000									39.5	8.5	52.3
female cattle, 1–2 years	6,000	5,500		50.1	13.5	65.6	47.3	10.0	54.2	97.4	23.5	119.8
male cattle, 1–2 years	11,500									105.8	29.1	137.6
female cattle, 2 years and older	6,000	5,500		50.0	13.5	65.5	47.3	10.0	54.2	97.3	23.5	119.7
dairy cows	10,000	13,000		70.2	22.1	78.6	68.8	18.0	83.0	139.0	40.1	161.6
of which:												
storage	10,000	6,000		70.2	22.1	78.6	27.5	7.2	33.2	97.7	29.3	111.8
pasture		7,000					41.3	10.8	49.8	41.3	10.8	49.8
bulls, 2 years and older	11,500									105.8	29.1	137.6
Cattle for meat												
white-veal calves	3,500									11.6	6.1	14.6
rosé-veal calves	5,000									27.8	9.8	24.0
female cattle younger than 1 year	3,500	1,500		29.6	7.4	37.9	14.1	2.7	16.5	43.7	10.1	54.4
male cattle (incl. oxes) younger than 1 year	4,500									27.3	7.3	32.5
female cattle, 1–2 years	6,000	5,500		49.7	13.4	64.9	47.3	10.0	54.2	97.0	23.4	119.1
male cattle (incl. oxes), 1–2 years	10,000									58.1	18.2	52.7
female cattle, 2 years and older	6,000	5,500		49.7	13.4	65.0	47.3	10.0	54.2	97.0	23.4	119.2
male cattle (incl. oxes), 2 years and older	10,000									58.1	18.2	52.7
fattening cows and meadow cows, 2 years and older		8,000	7,000	48.5	14.0	61.0	62.8	13.6	73.7	111.3	27.6	134.7
suckler cows		8,000	7,000	48.5	14.0	61.0	62.8	13.6	73.7	111.3	27.6	134.7
Sheep [2]		2,000	325	4.4	1.3	5.7	21.6	4.9	25.3	26.0	6.2	31.0
Milch goats [2]			1,300							22.4	7.1	23.8

[1] Only relevant for grazing livestock. All pasture manure is regarded as liquid manure.
[2] Excretion per mother, including the excretion of lambs, male animals and animals raised for breeding.

Table 15
Manure production and nutrient excretion factors of cattle, sheep and goats, 1999

Section of the agricultural census	Manure quantity			Nutrient excretion								
	liquid manure		solid manure	indoor season			grazing season			full year		
	indoor season	grazing season[1]	(indoor season)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
South and East Netherlands (maize silage diet)	*kg/animal*											
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		28.4	7.8	36.7	11.9	2.7	15.7	40.3	10.5	52.4
female cattle 1 year and older	6,000	5,500		46.8	13.9	62.0	41.2	10.1	53.6	88.0	24.0	115.6
dairy cows	10,000	13,000		61.6	20.3	66.9	69.3	20.0	88.7	130.9	40.3	155.6
of which:												
storage	10,000	6,000		61.6	20.3	66.9	27.7	8.0	35.5	89.3	28.3	102.4
pasture		7,000					41.6	12.0	53.2	41.6	12.0	53.2
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		28.4	7.8	36.7	11.9	2.7	15.7	40.3	10.5	52.4
female cattle 1 year and older	6,000	5,500		46.8	13.9	62.0	41.2	10.1	53.6	88.0	24.0	115.6
North and West Netherlands (grass silage diet)												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		32.4	8.8	43.9	13.1	3.0	17.3	45.5	11.8	61.2
female cattle 1 year and older	6,000	5,500		50.5	14.8	69.0	41.2	10.1	53.6	91.7	24.9	122.6
dairy cows	10,000	13,000		71.9	24.0	84.0	79.4	22.5	103.7	151.3	46.5	187.7
of which:												
storage	10,000	6,000		71.9	24.0	84.0	31.8	9.0	41.5	103.7	33.0	125.5
pasture		7,000					47.6	13.5	62.2	47.6	13.5	62.2
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		32.3	8.7	43.9	13.1	3.0	17.3	45.4	11.7	61.2
female cattle 1 year and older	6,000	5,500		50.5	14.8	69.0	41.2	10.1	53.6	91.7	24.9	122.6
Netherlands												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		30.1	8.2	39.8	12.4	2.8	16.4	42.5	11.0	56.2
male cattle younger than 1 year	5,000									37.9	9.2	52.8
female cattle, 1–2 years	6,000	5,500		48.4	14.3	65.0	41.2	10.1	53.6	89.6	24.4	118.6
male cattle, 1–2 years	11,500									101.0	30.6	136.7
female cattle, 2 years and older	6,000	5,500		48.3	14.3	64.9	41.2	10.1	53.6	89.5	24.4	118.5
dairy cows	10,000	13,000		66.4	22.0	74.8	74.0	21.2	95.7	140.4	43.2	170.5
of which:												
storage	10,000	6,000		66.4	22.0	74.8	29.6	8.5	38.3	96.0	30.5	113.1
pasture		7,000					44.4	12.7	57.4	44.4	12.7	57.4
bulls, 2 years and older	11,500									101.0	30.6	136.7
Cattle for meat												
white-veal calves	3,500									10.9	5.7	14.7
rosé-veal calves	5,000									34.3	12.3	31.1
female cattle younger than 1 year	3,500	1,500		29.7	8.1	39.0	12.3	2.8	16.2	42.0	10.9	55.2
male cattle (incl. oxes) younger than 1 year	4,500									27.4	7.4	30.9
female cattle, 1–2 years	6,000	5,500		48.0	14.2	64.3	41.2	10.1	53.6	89.2	24.3	117.9
male cattle (incl. oxes), 1–2 years	10,000									58.4	18.5	49.0
female cattle, 2 years and older	6,000	5,500		48.1	14.2	64.4	41.2	10.1	53.6	89.3	24.3	118.0
male cattle (incl. oxes), 2 years and older	10,000									58.4	18.5	49.0
fattening cows and meadow cows, 2 years and older		8,000	7,000	43.2	14.5	64.5	51.6	14.1	71.5	94.8	28.6	136.0
suckler cows		8,000	7,000	43.2	14.5	64.5	51.6	14.1	71.5	94.8	28.6	136.0
Sheep[2]		2,000	325	3.9	1.2	5.2	18.8	4.9	25.5	22.7	6.1	30.7
Milch goats[2]			1,300							19.3	6.8	19.3

[1] Only relevant for grazing livestock. All pasture manure is regarded as liquid manure.
[2] Excretion per mother, including the excretion of lambs, male animals and animals raised for breeding.

Table 16
Manure production and nutrient excretion factors of cattle, sheep and goats, 2000

Section of the agricultural census	Manure quantity			Nutrient excretion								
	liquid manure		solid manure	indoor season			grazing season			full year		
	indoor season	grazing season[1]	(indoor season)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
South and East Netherlands (maize silage diet)	*kg/animal*											
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		27.4	7.2	33.2	12.4	2.9	15.9	39.8	10.1	49.1
female cattle 1 year and older	6,000	5,500		44.9	12.6	55.3	42.9	10.8	54.1	87.8	23.4	109.4
dairy cows	13,000	12,000		65.6	22.2	69.8	59.3	17.8	75.3	124.9	40.0	145.1
of which:												
storage	13,000	5,000		65.6	22.2	69.8	23.7	7.1	30.1	89.3	29.3	99.9
pasture		7,000					35.6	10.7	45.2	35.6	10.7	45.2
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		27.4	7.2	33.2	12.4	2.9	15.9	39.8	10.1	49.1
female cattle 1 year and older	6,000	5,500		44.9	12.6	55.3	42.9	10.8	54.1	87.8	23.4	109.4
North and West Netherlands (grass silage diet)												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		31.1	7.9	39.2	13.7	3.2	17.5	44.8	11.1	56.7
female cattle 1 year and older	6,000	5,500		48.3	13.3	61.2	42.9	10.8	54.1	91.2	24.1	115.3
dairy cows	13,000	12,000		77.1	25.2	87.6	72.5	20.8	91.5	149.6	46.0	179.1
of which:												
storage	13,000	5,000		77.1	25.2	87.6	29.0	8.3	36.6	106.1	33.5	124.2
pasture		7,000					43.5	12.5	54.9	43.5	12.5	54.9
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		31.1	7.9	39.2	13.7	3.2	17.5	44.8	11.1	56.7
female cattle 1 year and older	6,000	5,500		48.3	13.3	61.2	42.9	10.8	54.1	91.2	24.1	115.3
Netherlands												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		29.0	7.5	35.9	13.0	3.0	16.6	42.0	10.5	52.5
male cattle younger than 1 year	5,000									37.0	8.8	49.3
female cattle, 1–2 years	6,000	5,500		46.4	12.9	57.9	42.9	10.8	54.1	89.3	23.7	112.0
male cattle, 1–2 years	11,500									96.8	27.6	121.2
female cattle, 2 years and older	6,000	5,500		46.3	12.9	57.8	42.9	10.8	54.1	89.2	23.7	111.9
dairy cows	13,000	12,000		71.0	23.6	78.1	65.5	19.2	82.8	136.5	42.8	160.9
of which:												
storage	13,000	5,000		71.0	23.6	78.1	26.2	7.7	33.1	97.2	31.3	111.2
pasture		7,000					39.3	11.5	49.7	39.3	11.5	49.7
bulls, 2 years and older	11,500									96.8	27.6	121.2
Cattle for meat												
white-veal calves	3,500									11.9	5.0	14.7
rosé-veal calves	5,000									34.1	12.4	31.7
female cattle younger than 1 year	3,500	1,500		28.6	7.4	35.2	12.8	3.0	16.4	41.4	10.4	51.6
male cattle (incl. oxes) younger than 1 year	4,500									26.6	7.3	31.2
female cattle, 1–2 years	6,000	5,500		46.0	12.8	57.2	42.9	10.8	54.1	88.9	23.6	111.3
male cattle (incl. oxes), 1–2 years	10,000									56.1	18.3	52.0
female cattle, 2 years and older	6,000	5,500		46.1	12.8	57.3	42.9	10.8	54.1	89.0	23.6	111.4
male cattle (incl. oxes), 2 years and older	10,000									56.1	18.3	52.0
fattening cows and meadow cows, 2 years and older		8,000	7,000	42.4	13.9	61.1	52.7	14.5	71.8	95.1	28.4	132.9
suckler cows		8,000	7,000	42.4	13.9	61.1	52.7	14.5	71.8	95.1	28.4	132.9
Sheep[2]		2,000	325	3.9	1.2	4.8	19.5	5.2	25.5	23.4	6.4	30.3
Milch goats[2]			1,300							19.4	6.0	18.2

[1] Only relevant for grazing livestock. All pasture manure is regarded as liquid manure.
[2] Excretion per mother, including the excretion of lambs, male animals and animals raised for breeding.

Table 17
Manure production and nutrient excretion factors of cattle, sheep and goats, 2001

Section of the agricultural census	Manure quantity			Nutrient excretion								
	liquid manure		solid manure	indoor season			grazing season			full year		
	indoor season	grazing season[1]	(indoor season)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
South and East Netherlands (maize silage diet)	*kg/animal*											
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		27.2	7.7	34.8	12.3	2.8	15.6	39.5	10.5	50.4
female cattle 1 year and older	6,000	5,500		44.8	13.7	58.6	42.8	10.4	53.1	87.6	24.1	111.7
dairy cows	13,000	12,000		65.1	22.7	71.6	64.8	19.2	82.1	129.9	41.9	153.7
of which:												
storage	13,000	5,000		65.1	22.7	71.6	25.9	7.7	32.8	91.0	30.4	104.4
pasture		7,000					38.9	11.5	49.3	38.9	11.5	49.3
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		27.2	7.7	34.8	12.3	2.8	15.6	39.5	10.5	50.4
female cattle 1 year and older	6,000	5,500		44.8	13.7	58.6	42.8	10.4	53.1	87.6	24.1	111.7
North and West Netherlands (grass silage diet)												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		31.0	8.6	41.6	13.6	3.0	17.2	44.6	11.6	58.8
female cattle 1 year and older	6,000	5,500		48.2	14.5	65.1	42.8	10.4	53.1	91.0	24.9	118.2
dairy cows	13,000	12,000		76.6	26.4	91.6	75.7	21.1	94.9	152.3	47.5	186.5
of which:												
storage	13,000	5,000		76.6	26.4	91.6	30.3	8.4	38.0	106.9	34.8	129.6
pasture		7,000					45.4	12.7	56.9	45.4	12.7	56.9
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		31.0	8.6	41.6	13.6	3.0	17.2	44.6	11.6	58.8
female cattle 1 year and older	6,000	5,500		48.2	14.5	65.1	42.8	10.4	53.1	91.0	24.9	118.2
Netherlands												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		28.9	8.1	37.8	12.9	2.9	16.3	41.8	11.0	54.1
male cattle younger than 1 year	5,000									37.1	9.3	50.2
female cattle, 1–2 years	6,000	5,500		46.3	14.1	61.5	42.8	10.4	53.1	89.1	24.5	114.6
male cattle, 1–2 years	11,500									96.6	30.0	129.1
female cattle, 2 years and older	6,000	5,500		46.3	14.0	61.4	42.8	10.4	53.1	89.1	24.4	114.5
dairy cows	13,000	12,000		70.6	24.5	81.1	70.0	20.1	88.2	140.6	44.6	169.3
of which:												
storage	13,000	5,000		70.6	24.5	81.1	28.0	8.0	35.3	98.6	32.5	116.4
pasture		7,000					42.0	12.1	52.9	42.0	12.1	52.9
bulls, 2 years and older	11,500									96.6	30.0	129.1
Cattle for meat												
white-veal calves	3,500									11.9	5.0	14.7
rosé-veal calves	5,000									34.9	12.8	30.2
female cattle younger than 1 year	3,500	1,500		28.5	8.0	37.1	12.7	2.9	16.1	41.2	10.9	53.2
male cattle (incl. oxes) younger than 1 year	4,500									27.1	7.6	28.8
female cattle, 1–2 years	6,000	5,500		45.9	14.0	60.8	42.8	10.4	53.1	88.7	24.4	113.9
male cattle (incl. oxes), 1–2 years	10,000									59.1	19.8	47.2
female cattle, 2 years and older	6,000	5,500		45.9	14.0	60.7	42.8	10.4	53.1	88.7	24.4	113.8
male cattle (incl. oxes), 2 years and older	10,000									59.1	19.8	47.2
fattening cows and meadow cows, 2 years and older		8,000	7,000	42.3	14.4	63.0	52.8	14.2	71.3	95.1	28.6	134.3
suckler cows		8,000	7,000	42.3	14.4	63.0	52.8	14.2	71.3	95.1	28.6	134.3
Sheep[2]		2,000	325	3.9	1.2	5.1	19.1	4.9	24.8	23.0	6.1	29.9
Milch goats[2]			1,300							20.6	6.9	20.4

[1] Only relevant for grazing livestock. All pasture manure is regarded as liquid manure.
[2] Excretion per mother, including the excretion of lambs, male animals and animals raised for breeding.

Table 18
Manure production and nutrient excretion factors of cattle, sheep and goats, 2002

Section of the agricultural census	Manure quantity			Nutrient excretion								
	liquid manure		solid manure	indoor season			grazing season			full year		
	indoor season	grazing season[1]	(indoor season)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
South and East Netherlands (maize silage diet)	*kg/animal*											
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		26.1	7.0	33.3	12.2	2.9	16.3	38.3	9.9	49.6
female cattle 1 year and older	6,000	5,500		42.4	12.3	54.8	42.4	10.7	55.2	84.8	23.0	110.0
dairy cows	13,000	12,000		60.3	20.8	66.6	62.3	18.8	82.7	122.6	39.6	149.3
of which:												
storage	13,000	7,000		60.3	20.8	66.6	37.4	11.3	49.6	97.7	32.1	116.2
pasture		5,000					24.9	7.5	33.1	24.9	7.5	33.1
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		26.1	7.0	33.3	12.2	2.9	16.3	38.3	9.9	49.6
female cattle 1 year and older	6,000	5,500		42.4	12.3	54.8	42.4	10.7	55.2	84.8	23.0	110.0
North and West Netherlands (grass silage diet)												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		29.3	7.6	38.9	13.5	3.1	17.9	42.8	10.7	56.8
female cattle 1 year and older	6,000	5,500		45.3	12.8	60.2	42.4	10.7	55.2	87.7	23.5	115.4
dairy cows	13,000	12,000		72.5	24.2	86.9	73.4	21.0	96.0	145.9	45.2	182.9
of which:												
storage	13,000	6,000		72.5	24.2	86.9	36.7	10.5	48.0	109.2	34.7	134.9
pasture		6,000					36.7	10.5	48.0	36.7	10.5	48.0
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		29.3	7.6	38.9	13.5	3.1	17.9	42.8	10.7	56.8
female cattle 1 year and older	6,000	5,500		45.3	12.8	60.2	42.4	10.7	55.2	87.7	23.5	115.4
Netherlands												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		27.6	7.3	35.8	12.8	3.0	17.0	40.4	10.3	52.8
male cattle younger than 1 year	5,000									36.4	8.9	50.4
female cattle, 1–2 years	6,000	5,500		43.7	12.5	57.2	42.4	10.7	55.2	86.1	23.2	112.4
male cattle, 1–2 years	11,500									90.8	26.6	119.3
female cattle, 2 years and older	6,000	5,500		43.7	12.5	57.2	42.4	10.7	55.2	86.1	23.2	112.4
dairy cows	13,000	12,000		66.2	22.4	76.4	67.7	19.8	89.1	133.9	42.2	165.5
of which:												
storage	13,000	6,500		66.2	22.4	76.4	37.1	10.9	48.8	103.3	33.3	125.2
pasture		5,500					30.6	8.9	40.3	30.6	8.9	40.3
bulls, 2 years and older	11,500									90.8	26.6	119.3
Cattle for meat												
white-veal calves	3,500									12.1	5.1	15.0
rosé-veal calves	5,000									30.5	10.4	27.1
female cattle younger than 1 year	3,500	1,500		27.2	7.2	35.3	12.7	3.0	16.9	39.9	10.2	52.2
male cattle (incl. oxes) younger than 1 year	4,500									26.2	7.7	27.8
female cattle, 1–2 years	6,000	5,500		43.4	12.5	56.7	42.4	10.7	55.2	85.8	23.2	111.9
male cattle (incl. oxes), 1–2 years	10,000									57.4	19.8	46.1
female cattle, 2 years and older	6,000	5,500		43.3	12.5	56.5	42.4	10.7	55.2	85.7	23.2	111.7
male cattle (incl. oxes), 2 years and older	10,000									57.4	19.8	46.1
fattening cows and meadow cows, 2 years and older		8,000	7,000	41.1	13.7	61.3	52.6	14.5	72.8	93.7	28.2	134.1
suckler cows		8,000	7,000	41.1	13.7	61.3	52.6	14.5	72.8	93.7	28.2	134.1
Sheep [2]		2,000	325	3.7	1.2	4.8	18.9	5.1	25.7	22.6	6.3	30.5
Milch goats [2]			1,300							20.1	6.7	20.7

[1] Only relevant for grazing livestock. All pasture manure is regarded as liquid manure.
[2] Excretion per mother, including the excretion of lambs, male animals and animals raised for breeding.

Table 19
Manure production and nutrient excretion factors of cattle, sheep and goats, 2003

Section of the agricultural census	Manure quantity			Nutrient excretion								
	liquid manure		solid manure	indoor season			grazing season			full year		
	indoor season	grazing season[1]	(indoor season)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
South and East Netherlands (maize silage diet)	*kg/animal*											
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		22.6	6.5	30.3	17.8	3.8	23.1	40.4	10.3	53.4
female cattle 1 year and older	6,000	5,500		42.9	13.4	59.1	36.9	11.0	59.1	79.8	24.4	118.2
dairy cows	13,000	12,000		70.0	23.6	82.6	55.4	17.2	76.0	125.4	40.8	158.6
of which:												
storage	13,000	7,200		70.0	23.6	82.6	33.2	10.3	45.6	103.2	33.9	128.2
pasture		4,800					22.2	6.9	30.4	22.2	6.9	30.4
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		22.6	6.5	30.3	17.8	3.8	23.1	40.4	10.3	53.4
female cattle 1 year and older	6,000	5,500		42.9	13.4	59.1	36.9	11.0	59.1	79.8	24.4	118.2
North and West Netherlands (grass silage diet)												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		24.9	7.1	35.2	19.1	4.1	24.8	44.0	11.2	60.0
female cattle 1 year and older	6,000	5,500		45.8	14.1	65.3	36.9	11.0	59.1	82.7	25.1	124.4
dairy cows	13,000	12,000		75.0	25.5	94.6	72.0	20.4	96.8	147.0	45.9	191.4
of which:												
storage	13,000	6,000		75.0	25.5	94.6	36.0	10.2	48.4	111.0	35.7	143.0
pasture		6,000					36.0	10.2	48.4	36.0	10.2	48.4
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		24.9	7.1	35.2	19.1	4.1	24.8	44.0	11.2	60.0
female cattle 1 year and older	6,000	5,500		45.8	14.1	65.3	36.9	11.0	59.1	82.7	25.1	124.4
Netherlands												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		23.7	6.8	32.5	18.4	3.9	23.9	42.1	10.7	56.4
male cattle younger than 1 year	5,000									36.9	9.2	52.2
female cattle, 1–2 years	6,000	5,500		44.2	13.7	61.9	36.9	11.0	59.1	81.1	24.7	121.0
male cattle, 1–2 years	11,500									91.7	29.2	129.5
female cattle, 2 years and older	6,000	5,500		44.2	13.7	61.8	36.9	11.0	59.1	81.1	24.7	120.9
dairy cows	13,000	12,000		72.4	24.5	88.4	63.5	18.8	86.1	135.9	43.3	174.5
of which:												
storage	13,000	6,500		72.4	24.5	88.4	34.6	10.3	47.0	107.0	34.8	135.4
pasture		5,500					28.9	8.5	39.1	28.9	8.5	39.1
bulls, 2 years and older	11,500									91.7	29.2	129.5
Cattle for meat												
white-veal calves	3,500									12.2	5.2	15.0
rosé-veal calves	5,000									30.8	10.3	26.8
female cattle younger than 1 year	3,500	1,500		23.4	6.7	32.0	18.3	3.9	23.7	41.7	10.6	55.7
male cattle (incl. oxes) younger than 1 year	4,500									26.6	7.6	27.8
female cattle, 1–2 years	6,000	5,500		43.9	13.6	61.3	36.9	11.0	59.1	80.8	24.6	120.4
male cattle (incl. oxes), 1–2 years	10,000									57.8	19.2	46.1
female cattle, 2 years and older	6,000	5,500		43.9	13.6	61.3	36.9	11.0	59.1	80.8	24.6	120.4
male cattle (incl. oxes), 2 years and older	10,000									57.8	19.2	46.1
fattening cows and meadow cows, 2 years and older		8,000	7,000	40.4	14.3	67.5	51.4	16.0	85.0	91.8	30.3	152.5
suckler cows		8,000	7,000	40.4	14.3	67.5	51.4	16.0	85.0	91.8	30.3	152.5
Sheep[2]		2,000	325	3.7	1.2	5.0	18.8	4.7	25.0	22.5	5.9	30.0
Milch goats[2]			1,300							20.0	7.0	21.3

[1] Only relevant for grazing livestock. All pasture manure is regarded as liquid manure.
[2] Excretion per mother, including the excretion of lambs, male animals and animals raised for breeding.

Table 20
Manure production and nutrient excretion factors of cattle, sheep and goats, 2004

Section of the agricultural census	Manure quantity			Nutrient excretion								
	liquid manure		solid manure	indoor season			grazing season			full year		
	indoor season	grazing season[1]	(indoor season)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
South and East Netherlands (maize silage diet)	*kg/animal*											
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		22.2	6.0	29.4	16.4	3.9	22.6	38.6	9.9	52.0
female cattle 1 year and older	6,000	5,500		42.0	12.5	57.6	33.2	10.9	56.7	75.2	23.4	114.3
dairy cows	13,000	13,000		66.6	21.5	76.9	56.5	17.1	77.1	123.1	38.6	154.0
of which:												
storage	13,000	8,000		66.6	21.5	76.9	33.9	10.3	46.3	100.5	31.8	123.2
pasture		5,000					22.6	6.8	30.8	22.6	6.8	30.8
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		22.2	6.0	29.4	16.4	3.9	22.6	38.6	9.9	52.0
female cattle 1 year and older	6,000	5,500		42.0	12.5	57.6	33.2	10.9	56.7	75.2	23.4	114.3
North and West Netherlands (grass silage diet)												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		24.5	6.6	34.3	17.6	4.1	24.2	42.1	10.7	58.5
female cattle 1 year and older	6,000	5,500		44.8	13.1	63.7	33.2	10.9	56.7	78.0	24.0	120.4
dairy cows	13,000	13,000		70.2	22.9	86.7	72.6	21.0	99.8	142.8	43.9	186.5
of which:												
storage	13,000	6,500		70.2	22.9	86.7	36.3	10.5	49.9	106.5	33.4	136.6
pasture		6,500					36.3	10.5	49.9	36.3	10.5	49.9
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		24.5	6.6	34.3	17.6	4.1	24.2	42.1	10.7	58.5
female cattle 1 year and older	6,000	5,500		44.8	13.1	63.7	33.2	10.9	56.7	78.0	24.0	120.4
Netherlands												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		23.2	6.3	31.6	16.9	4.0	23.3	40.1	10.3	54.9
male cattle younger than 1 year	5,000									37.2	9.2	53.2
female cattle, 1–2 years	6,000	5,500		43.3	12.8	60.4	33.2	10.9	56.7	76.5	23.7	117.1
male cattle, 1–2 years	11,500									89.7	27.1	126.1
female cattle, 2 years and older	6,000	5,500		43.3	12.8	60.4	33.2	10.9	56.7	76.5	23.7	117.1
dairy cows	13,000	13,000		68.4	22.2	81.7	64.4	19.0	88.2	132.8	41.2	169.9
of which:												
storage	13,000	7,500		68.4	22.2	81.7	35.1	10.4	48.1	103.5	32.6	129.8
pasture		5,500					29.3	8.6	40.1	29.3	8.6	40.1
bulls, 2 years and older	11,500									89.7	27.1	126.1
Cattle for meat												
white-veal calves	3,000									10.5	4.6	14.1
rosé-veal calves	5,000									27.1	8.7	25.9
female cattle younger than 1 year	3,500	1,500		23.0	6.2	31.2	16.8	4.0	23.2	39.8	10.2	54.4
male cattle (incl. oxes) younger than 1 year	4,500									27.2	7.3	28.5
female cattle, 1–2 years	6,000	5,500		43.0	12.7	59.7	33.2	10.9	56.7	76.2	23.6	116.4
male cattle (incl. oxes), 1–2 years	10,000									57.5	19.0	48.3
female cattle, 2 years and older	6,000	5,500		43.0	12.7	59.8	33.2	10.9	56.7	76.2	23.6	116.5
male cattle (incl. oxes), 2 years and older	10,000									57.5	19.0	48.3
fattening cows and meadow cows, 2 years and older		8,000	7,000	40.0	13.5	67.5	46.0	15.8	81.4	86.0	29.3	148.9
suckler cows		8,000	7,000	40.0	13.5	67.5	46.0	15.8	81.4	86.0	29.3	148.9
Sheep [2]		2,000	325	2.6	0.9	4.1	12.1	4.2	21.4	14.7	5.1	25.5
Milch goats [2]			1,300							17.8	5.4	18.3

[1] Only relevant for grazing livestock. All pasture manure is regarded as liquid manure.
[2] Excretion per mother, including the excretion of lambs, male animals and animals raised for breeding.

Table 21
Manure production and nutrient excretion factors of cattle, sheep and goats, 2005

Section of the agricultural census	Manure quantity			Nutrient excretion								
	liquid manure		solid manure	indoor season			grazing season			full year		
	indoor season	grazing season[1]	(indoor season)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
South and East Netherlands (maize silage diet)	*kg/animal*											
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		22.0	6.0	29.2	16.5	4.0	23.1	38.5	10.0	52.3
female cattle 1 year and older	6,000	5,500		41.5	12.2	56.9	33.1	11.1	57.5	74.6	23.3	114.4
dairy cows	13,000	13,000		60.8	20.2	73.8	62.7	19.2	85.0	123.5	39.4	158.8
of which:												
storage	13,000	8,000		60.8	20.2	73.8	37.6	11.5	51.0	98.4	31.7	124.8
pasture		5,000					25.1	7.7	34.0	25.1	7.7	34.0
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		22.0	6.0	29.2	16.5	4.0	23.1	38.5	10.0	52.3
female cattle 1 year and older	6,000	5,500		41.5	12.2	56.9	33.1	11.1	57.5	74.6	23.3	114.4
North and West Netherlands (grass silage diet)												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		24.2	6.5	33.9	17.7	4.3	24.8	41.9	10.8	58.7
female cattle 1 year and older	6,000	5,500		44.2	12.8	62.6	33.1	11.1	57.5	77.3	23.9	120.1
dairy cows	13,000	13,000		71.5	23.1	93.1	73.6	21.8	100.6	145.1	44.9	193.7
of which:												
storage	13,000	6,500		71.5	23.1	93.1	36.8	10.9	50.3	108.3	34.0	143.4
pasture		6,500					36.8	10.9	50.3	36.8	10.9	50.3
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		24.2	6.5	33.9	17.7	4.3	24.8	41.9	10.8	58.7
female cattle 1 year and older	6,000	5,500		44.2	12.8	62.6	33.1	11.1	57.5	77.3	23.9	120.1
Netherlands												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		23.0	6.2	31.3	17.0	4.1	23.9	40.0	10.3	55.2
male cattle younger than 1 year	5,000									37.0	9.3	53.6
female cattle, 1–2 years	6,000	5,500		42.7	12.5	59.5	33.1	11.1	57.5	75.8	23.6	117.0
male cattle, 1–2 years	11,500									88.5	26.5	124.1
female cattle, 2 years and older	6,000	5,500		42.7	12.5	59.5	33.1	11.1	57.5	75.8	23.6	117.0
dairy cows	13,000	13,000		66.0	21.6	83.2	68.0	20.5	92.7	134.0	42.1	175.9
of which:												
storage	13,000	7,500		66.0	21.6	83.2	37.2	11.2	50.7	103.2	32.8	133.9
pasture		5,500					30.8	9.3	42.0	30.8	9.3	42.0
bulls, 2 years and older	11,500									88.5	26.5	124.1
Cattle for meat												
white-veal calves	3,000									10.6	4.6	14.2
rosé-veal calves	5,000									27.2	8.6	28.0
female cattle younger than 1 year	3,500	1,500		22.8	6.2	30.9	16.9	4.1	23.7	39.7	10.3	54.6
male cattle (incl. oxes) younger than 1 year	4,500									27.0	7.5	29.6
female cattle, 1–2 years	6,000	5,500		42.4	12.4	58.9	33.1	11.1	57.5	75.5	23.5	116.4
male cattle (incl. oxes), 1–2 years	10,000									56.8	19.5	51.3
female cattle, 2 years and older	6,000	5,500		42.5	12.4	59.0	33.1	11.1	57.5	75.6	23.5	116.5
male cattle (incl. oxes), 2 years and older	10,000									56.8	19.5	51.3
fattening cows and meadow cows, 2 years and older		8,000	7,000	39.1	13.2	66.1	45.8	16.0	82.6	84.9	29.2	148.7
suckler cows		8,000	7,000	39.1	13.2	66.1	45.8	16.0	82.6	84.9	29.2	148.7
Sheep[2]		2,000	325	2.6	0.9	4.1	12.2	4.3	21.9	14.8	5.2	26.0
Milch goats[2]			1,300							17.7	5.5	18.8

[1] Only relevant for grazing livestock. All pasture manure is regarded as liquid manure.
[2] Excretion per mother, including the excretion of lambs, male animals and animals raised for breeding.

Table 22
Manure production and nutrient excretion factors of cattle, sheep, goats, horses and ponies, 2006

Section of the agricultural census	Manure quantity			Nutrient excretion								
	liquid manure		solid manure	indoor season			grazing season			full year		
	indoor season	grazing season[1]	(indoor season)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
South and East Netherlands (maize silage diet)	*kg/animal*											
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		21.8	6.0	28.7	16.1	3.9	23.5	37.9	9.9	52.2
female cattle 1 year and older	6,000	5,500		39.0	11.6	52.9	34.1	11.6	61.7	73.1	23.2	114.6
dairy cows	14,000	12,000		64.2	21.1	79.0	58.0	18.1	80.4	122.2	39.2	159.4
of which:												
storage	14,000	7,500		64.2	21.1	79.0	36.3	11.3	50.3	100.5	32.4	129.3
pasture		4,500					21.7	6.8	30.1	21.7	6.8	30.1
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		21.8	6.0	28.7	16.1	3.9	23.5	37.9	9.9	52.2
female cattle 1 year and older	6,000	5,500		39.0	11.6	52.9	34.1	11.6	61.7	73.1	23.2	114.6
North and West Netherlands (grass silage diet)												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		23.9	6.4	33.2	17.3	4.2	25.2	41.2	10.6	58.4
female cattle 1 year and older	6,000	5,500		41.4	12.1	58.2	34.1	11.6	61.7	75.5	23.7	119.9
dairy cows	14,000	12,000		71.3	23.0	91.5	72.3	21.4	101.4	143.6	44.4	192.9
of which:												
storage	14,000	6,000		71.3	23.0	91.5	36.1	10.7	50.6	107.4	33.7	142.1
pasture		6,000					36.2	10.7	50.8	36.2	10.7	50.8
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		23.9	6.4	33.2	17.3	4.2	25.2	41.2	10.6	58.4
female cattle 1 year and older	6,000	5,500		41.4	12.1	58.2	34.1	11.6	61.7	75.5	23.7	119.9
Netherlands												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		22.8	6.2	30.8	16.6	4.0	24.3	39.4	10.2	55.1
male cattle younger than 1 year	5,000									36.7	9.3	53.4
female cattle, 1–2 years	6,000	5,500		40.1	11.8	55.3	34.1	11.6	61.7	74.2	23.4	117.0
male cattle, 1–2 years	11,500									87.4	26.5	121.5
female cattle, 2 years and older	6,000	5,500		40.1	11.8	55.3	34.1	11.6	61.7	74.2	23.4	117.0
dairy cows	14,000	12,000		67.7	22.0	85.1	65.0	19.7	90.7	132.7	41.7	175.8
of which:												
storage	14,000	7,000		67.7	22.0	85.1	36.2	11.0	50.4	103.9	33.0	135.5
pasture		5,000					28.8	8.7	40.3	28.8	8.7	40.3
bulls, 2 years and older	11,500									87.4	26.5	121.5
Cattle for meat												
white-veal calves	3,000									11.2	5.1	15.0
rosé-veal calves	5,000									27.0	9.0	26.6
female cattle younger than 1 year	3,500	1,500		22.5	6.1	30.3	16.5	4.0	24.1	39.0	10.1	54.4
male cattle (incl. oxes) younger than 1 year	4,500									27.3	7.7	29.6
female cattle, 1–2 years	6,000	5,500		39.8	11.8	54.7	34.1	11.6	61.7	73.9	23.4	116.4
male cattle (incl. oxes), 1–2 years	10,000									57.3	19.8	49.9
female cattle, 2 years and older	6,000	5,500		39.9	11.8	54.9	34.1	11.6	61.7	74.0	23.4	116.6
male cattle (incl. oxes), 2 years and older	10,000									57.3	19.8	49.9
fattening cows and meadow cows, 2 years and older		8,000	7,000	38.7	13.2	65.0	44.5	15.8	83.5	83.2	29.0	148.5
suckler cows		8,000	7,000	38.7	13.2	65.0	44.5	15.8	83.5	83.2	29.0	148.5
Sheep [2]		2,000	325	2.6	0.9	4.1	11.7	4.2	21.9	14.3	5.1	26.0
Milch goats [2]			1,300							17.7	5.6	18.5
Horses [3]		3,300	5,200	33.3	12.4	41.7	30.2	10.8	38.2	63.5	23.2	79.9
Ponies [3]		2,100	2,100	14.4	5.2	18.7	19.9	6.9	25.7	34.3	12.1	44.4

1) Only relevant for grazing livestock. All pasture manure is regarded as liquid manure.
2) Excretion per mother, including the excretion of lambs, male animals and animals raised for breeding.
3) Excretion during indoor season consists of excretion during housing in winter and summer. Excretion during grazing season consists of excretion during grazing in summer and winter.

Table 23
Manure production and nutrient excretion factors of cattle, sheep, goats, horses and ponies, 2007

Section of the agricultural census	Manure quantity			Nutrient excretion								
	liquid manure		solid manure	indoor season			grazing season			full year		
	indoor season	grazing season[1]	(indoor season)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
South and East Netherlands (maize silage diet)	*kg/animal*											
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		24.0	6.3	31.0	13.4	3.4	19.2	37.4	9.7	50.2
female cattle 1 year and older	6,000	5,500		42.3	12.0	59.9	31.5	11.2	56.5	73.8	23.2	116.4
dairy cows	14,000	12,000		67.0	21.0	80.3	61.3	18.8	81.4	128.3	39.8	161.7
of which:												
storage	14,000	8,000		67.0	21.0	80.3	41.3	12.7	54.9	108.3	33.7	135.2
pasture		4,000					20.0	6.1	26.5	20.0	6.1	26.5
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		24.0	6.3	31.0	13.4	3.4	19.2	37.4	9.7	50.2
female cattle 1 year and older	6,000	5,500		42.3	12.0	59.9	31.5	11.2	56.5	73.8	23.2	116.4
North and West Netherlands (grass silage diet)												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		25.6	6.6	35.0	15.8	4.0	22.7	41.4	10.6	57.7
female cattle 1 year and older	6,000	5,500		42.8	12.1	61.0	33.4	11.9	59.9	76.2	24.0	120.9
dairy cows	14,000	12,000		74.5	23.0	93.8	73.1	21.8	99.1	147.6	44.8	192.9
of which:												
storage	14,000	6,500		74.5	23.0	93.8	39.6	11.8	53.7	114.1	34.8	147.5
pasture		5,500					33.5	10.0	45.4	33.5	10.0	45.4
Cattle for meat												
female cattle younger than 1 year	3,500	1,500		25.6	6.6	35.0	15.8	4.0	22.7	41.4	10.6	57.7
female cattle 1 year and older	6,000	5,500		42.8	12.1	61.0	33.4	11.9	59.9	76.2	24.0	120.9
Netherlands												
Dairy cattle												
female cattle younger than 1 year	3,500	1,500		24.6	6.4	32.5	14.3	3.6	20.5	38.9	10.0	53.0
male cattle younger than 1 year	5,000									36.6	9.2	52.0
female cattle, 1–2 years	6,000	5,500		42.5	12.0	60.3	32.2	11.5	57.8	74.7	23.5	118.1
male cattle, 1–2 years	11,500									89.6	26.5	122.9
female cattle, 2 years and older	6,000	5,500		42.5	12.0	60.3	32.2	11.5	57.8	74.7	23.5	118.1
dairy cows	14,000	12,000		70.2	21.8	86.0	66.3	20.0	88.8	136.5	41.8	174.8
of which:												
storage	14,000	7,500		70.2	21.8	86.0	40.6	12.3	54.4	110.8	34.1	140.4
pasture		4,500					25.7	7.7	34.4	25.7	7.7	34.4
bulls, 2 years and older	11,500									89.6	26.5	122.9
Cattle for meat												
white-veal calves	3,000									11.0	4.8	14.9
rosé-veal calves	4,300									28.1	9.0	24.6
female cattle younger than 1 year	3,500	1,500		24.4	6.4	32.0	14.0	3.6	20.1	38.4	10.0	52.1
male cattle (incl. oxes) younger than 1 year	4,500									26.6	7.2	27.6
female cattle, 1–2 years	6,000	5,500		42.4	12.0	60.2	32.0	11.4	57.4	74.4	23.4	117.6
male cattle (incl. oxes), 1–2 years	10,000									54.5	18.9	46.7
female cattle, 2 years and older	6,000	5,500		42.4	12.0	60.2	32.0	11.4	57.3	74.4	23.4	117.5
male cattle (incl. oxes), 2 years and older	10,000									54.5	18.9	46.7
fattening cows and meadow cows, 2 years and older		8,000	7,000	39.4	13.1	65.1	43.4	16.3	81.1	82.8	29.4	146.2
suckler cows		8,000	7,000	39.4	13.1	65.1	43.4	16.3	81.1	82.8	29.4	146.2
Sheep[2]		2,000	325	2.6	0.9	4.0	11.1	4.1	20.7	13.7	5.0	24.7
Milch goats[2]			1,300							15.8	6.1	15.4
Horses[3]		3,300	5,200	32.1	14.1	48.2	29.4	12.0	42.6	61.5	26.1	90.8
Ponies[3]		2,100	2,100	13.8	5.9	21.4	19.4	7.4	27.9	33.2	13.3	49.3

1) Only relevant for grazing livestock. All pasture manure is regarded as liquid manure.
2) Excretion per mother, including the excretion of lambs, male animals and animals raised for breeding.
3) Excretion during indoor season consists of excretion during housing in winter and summer. Excretion during grazing season consists of excretion during grazing in summer and winter.

Table 24
Manure production and nutrient excretion factors of pigs, poultry, fur-bearing animals and rabbits, 1990–1992

Section of the agricultural census	1990					1991					1992				
	manure quantity		nutrient excretion			manure quantity		nutrient excretion			manure quantity		nutrient excretion		
	liquid manure	solid manure	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	liquid manure	solid manure	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	liquid manure	solid manure	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
	kg/animal														
Pigs															
fattening pigs, 20 to 50 kg and >50 kg	1,300		14.3	5.8	9.6	1,300		13.7	6.0	9.9	1,250		14.4	5.8	9.8
breeding pigs, 20 to 50 kg and gilts not yet covered	1,300		14.0	7.7	9.3	1,300		14.1	7.7	9.6	1,300		14.0	7.9	9.6
covered sows, sows with piglets and other breeding sows [1]	5,200		33.8	19.5	21.8	5,200		30.9	18.3	22.0	5,200		31.8	18.4	22.3
boars >50 kg, not yet ready to breed	1,300		14.0	7.7	9.3	1,300		14.1	7.7	9.6	1,300		14.0	7.9	9.6
boars	3,200		25.0	14.8	14.2	3,200		24.5	14.8	14.7	3,200		25.4	15.5	14.6
Chickens															
broilers		10.0	0.61	0.22	0.34		10.0	0.64	0.22	0.34		10.0	0.64	0.23	0.35
broilers, breeding females under 18 weeks		15.4	0.52	0.30	0.22		15.4	0.54	0.33	0.25		15.4	0.59	0.29	0.25
broilers, breeding females 18 weeks and older		25.3	1.33	0.75	0.59		25.3	1.42	0.78	0.66		25.3	1.48	0.77	0.67
laying hens under 18 weeks															
liquid manure	25.4		0.38	0.19	0.15	25.4		0.39	0.21	0.17	25.4		0.43	0.18	0.18
solid manure		10.0	0.38	0.19	0.15		10.0	0.39	0.21	0.17		10.0	0.43	0.18	0.18
laying hens 18 weeks and older															
liquid manure	63.5		0.75	0.48	0.39	63.5		0.82	0.51	0.45	63.5		0.87	0.51	0.46
solid manure		22.5	0.75	0.48	0.39		22.5	0.82	0.51	0.45		22.5	0.87	0.51	0.46
Ducks for meat and turkeys															
young ducks for meat		86.3	1.12	0.63	0.57		86.3	1.12	0.63	0.57		86.3	1.12	0.63	0.57
young turkeys for meat		37.9	1.98	0.92	0.94		37.9	1.98	0.92	0.94		37.9	1.98	0.92	0.94
breeding turkeys															
younger than 7 months		49.4	2.38	1.58	1.20		49.4	2.38	1.58	1.20		49.4	2.38	1.58	1.20
7 months and older		78.6	3.17	2.20	1.32		78.6	3.17	2.20	1.32		78.6	3.17	2.20	1.32
Fur-bearing animals and rabbits															
rabbits (does) [2] [3]		377	8.7	4.9	4.1		377	8.7	4.9	4.1		377	8.7	4.9	4.1
minks (mother) [3]		104	4.1	2.8	0.2		104	4.1	2.8	0.2		104	4.1	2.8	0.2
foxes (mother) [3]		272	13.9	9.8	0.7		272	13.9	9.8	0.7		272	13.9	9.8	0.7

[1] Including piglets.
[2] Including rabbits for meat.
[3] Including male animals and animals raised for breeding.

Table 25
Manure production and nutrient excretion factors of pigs, poultry, fur-bearing animals and rabbits, 1993–1995

Section of the agricultural census	1993					1994					1995				
	manure quantity		nutrient excretion			manure quantity		nutrient excretion			manure quantity		nutrient excretion		
	liquid manure	solid manure	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	liquid manure	solid manure	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	liquid manure	solid manure	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
	kg/animal														
Pigs															
fattening pigs, 20 to 50 kg and >50 kg	1,250		14.5	5.8	10.3	1,250		14.9	5.6	10.0	1,250		14.5	5.3	9.9
breeding pigs, 20 to 50 kg and gilts not yet covered	1,300		13.7	7.9	9.9	1,300		13.6	7.2	9.8	1,300		14.4	6.6	9.7
covered sows, sows with piglets and other breeding sows [1]	5,200		31.9	18.7	23.7	5,200		30.1	16.6	22.1	5,200		31.4	15.2	21.6
boars >50 kg, not yet ready to breed	1,300		13.7	7.9	9.9	1,300		13.6	7.2	9.8	1,300		14.4	6.6	9.7
boars	3,200		24.6	12.9	15.1	3,200		23.0	13.8	15.3	3,200		24.6	12.6	15.2
Chickens															
broilers		10.0	0.62	0.23	0.34		10.0	0.57	0.22	0.33		11.0	0.63	0.21	0.32
broilers, breeding parents under 18 weeks [2]		15.4	0.54	0.29	0.25		15.4	0.52	0.30	0.28		13.4	0.45	0.24	0.24
broilers, breeding females 18 weeks and older [2]		25.3	1.55	0.77	0.65		25.3	1.41	0.75	0.66		23.0	1.29	0.64	0.52
laying hens under 18 weeks															
liquid manure	25.4		0.39	0.19	0.17	25.4		0.38	0.19	0.19	25.4		0.36	0.17	0.18
solid manure		10.0	0.39	0.19	0.17		10.0	0.38	0.19	0.19		10.0	0.36	0.17	0.18
laying hens 18 weeks and older															
liquid manure	63.5		0.91	0.50	0.44	63.5		0.81	0.49	0.44	63.5		0.81	0.45	0.38
solid manure		22.5	0.91	0.50	0.44		24.5	0.81	0.49	0.44		23.5	0.81	0.45	0.38
Ducks for meat and turkeys															
young ducks for meat		86.3	1.12	0.63	0.57		86.3	1.12	0.63	0.57		70.0	1.09	0.60	0.58
young turkeys for meat		37.9	2.08	0.97	0.98		37.9	2.08	0.97	0.98		45.0	1.97	0.84	0.92
breeding turkeys															
younger than 7 months		49.4	2.38	1.58	1.20		49.4	2.38	1.58	1.20		49.4	2.78	1.64	1.25
7 months and older		78.6	3.17	2.20	1.32		78.6	3.17	2.20	1.32		78.6	3.04	1.65	1.14
Fur-bearing animals and rabbits															
rabbits (does) [3] [4]		377	8.7	4.9	4.1		377	8.7	4.9	4.1		377	8.1	4.2	7.2
minks (mothers) [4]		104	4.1	2.8	0.2		104	4.1	2.8	0.2		104	4.1	2.8	0.2
foxes (mothers) [4]		272	13.9	9.8	0.7		272	13.9	9.8	0.7		272	13.9	9.8	0.7

[1] Including piglets.
[2] In 1993 and 1994 factors are expressed per female parent broiler and in 1995 per parent broiler.
[3] Including rabbits for meat.
[4] Including male animals and animals raised for breeding.

Table 26
Manure production and nutrient excretion factors of pigs, poultry, fur-bearing animals and rabbits, 1996–1998

Section of the agricultural census	1996					1997					1998				
	manure quantity		nutrient excretion			manure quantity		nutrient excretion			manure quantity		nutrient excretion		
	liquid manure	solid manure	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	liquid manure	solid manure	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	liquid manure	solid manure	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
	kg/animal														
Pigs															
fattening pigs, 20 to 50 kg and >50 kg	1,250		14.3	5.2	9.9	1,100		13.0	4.6	9.0	1,200		13.8	4.9	9.5
breeding pigs, 20 to 50 kg and gilts not yet covered	1,300		13.9	6.2	9.7	1,300		13.8	6.0	10.2	1,300		13.4	6.3	9.5
covered sows, sows with piglets and other breeding sows [1]	5,200		31.3	14.3	21.7	4,700		29.9	13.6	20.0	5,100		29.9	14.4	19.8
boars >50 kg, not yet ready to breed	1,300		13.9	6.2	9.7	1,300		13.8	6.0	10.2	1,300		13.4	6.3	9.5
boars	3,200		23.7	11.4	15.6	3,200		22.8	11.6	16.0	3,200		22.4	11.4	14.8
Chickens															
broilers		11.0	0.61	0.21	0.32		11.0	0.59	0.22	0.35		11.0	0.52	0.19	0.30
broilers, breeding parents under 18 weeks		13.4	0.42	0.21	0.26		13.4	0.45	0.22	0.28		13.4	0.41	0.21	0.26
broilers, breeding females 18 weeks and older		23.0	1.29	0.61	0.57		23.0	1.18	0.59	0.58		23.0	1.17	0.60	0.53
laying hens under 18 weeks															
liquid manure	25.4		0.34	0.15	0.20	25.4		0.36	0.15	0.18	25.4		0.33	0.15	0.20
solid manure		10.0	0.34	0.15	0.20		10.0	0.36	0.15	0.18		9.0	0.33	0.15	0.20
laying hens 18 weeks and older															
liquid manure	63.5		0.80	0.43	0.41	63.5		0.70	0.40	0.41	63.5		0.69	0.41	0.37
solid manure		23.5	0.80	0.43	0.41		23.5	0.70	0.40	0.41		24.0	0.69	0.41	0.37
Ducks for meat and turkeys															
young ducks for meat		70.0	1.09	0.60	0.58		70.0	1.09	0.60	0.58		70.0	1.10	0.50	0.58
young turkeys for meat		45.0	1.97	0.84	0.92		45.0	1.97	0.84	0.92		45.0	1.89	0.86	0.92
breeding turkeys															
younger than 7 months		49.4	2.52	1.49	1.16		49.4	2.52	1.49	1.16		49.4	2.52	1.49	1.16
7 months and older		78.6	3.04	1.65	1.14		78.6	3.04	1.65	1.14		78.6	3.04	1.65	1.14
Fur-bearing animals and rabbits															
rabbits (does) [2] [3]		377	8.1	4.2	7.2		377	8.1	4.2	7.2		377	7.9	3.6	7.2
minks (mother) [3]		104	3.5	2.6	0.7		104	3.5	2.6	0.7		104	3.7	2.2	0.7
foxes (mother) [3]		272	9.0	6.9	1.8		272	9.0	6.9	1.8		272	9.6	5.8	1.8

[1] Including piglets.
[2] Including rabbits for meat.
[3] Including male animals and animals raised for breeding.

Table 27
Manure production and nutrient excretion factors of pigs, poultry, fur-bearing animals and rabbits, 1999–2001

Section of the agricultural census	1999					2000					2001				
	manure quantity		nutrient excretion			manure quantity		nutrient excretion			manure quantity		nutrient excretion		
	liquid manure	solid manure	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	liquid manure	solid manure	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	liquid manure	solid manure	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
	kg/animal														
Pigs															
fattening pigs, 20 to 50 kg and >50 kg	1,200		13.3	4.6	9.4	1,200		12.3	4.5	9.3	1,200		11.8	4.1	9.4
breeding pigs, 20 to 50 kg and gilts not yet covered	1,300		13.9	6.4	10.1	1,300		14.2	6.8	10.1	1,300		12.9	6.0	10.1
covered sows, sows with piglets and other breeding sows [1]	5,100		30.6	13.7	20.8	5,100		30.9	14.3	21.0	5,100		30.3	13.7	22.1
boars >50 kg, not yet ready to breed	1,300		13.9	6.4	10.1	1,300		14.2	6.8	10.1	1,300		12.9	6.0	10.1
boars	3,200		22.4	10.3	15.3	3,200		22.9	11.3	15.3	3,200		23.2	10.8	15.3
Chickens															
broilers		11.0	0.54	0.22	0.26		11.0	0.51	0.22	0.27		11.0	0.49	0.18	0.28
broilers, breeding parents under 18 weeks		13.4	0.38	0.20	0.24		13.4	0.37	0.20	0.24		13.4	0.33	0.19	0.24
broilers, breeding females 18 weeks and older		23.0	1.18	0.60	0.53		23.0	1.13	0.59	0.53		23.0	1.07	0.55	0.47
laying hens under 18 weeks															
liquid manure	25.4		0.33	0.14	0.19	25.4		0.31	0.14	0.19	25.4		0.29	0.14	0.19
solid manure		9.0	0.33	0.14	0.19		9.0	0.31	0.14	0.19		9.1	0.29	0.14	0.19
laying hens 18 weeks and older															
liquid manure	63.5		0.71	0.43	0.33	63.5		0.67	0.42	0.33	63.5		0.65	0.39	0.33
solid manure		24.0	0.71	0.43	0.33		24.0	0.67	0.42	0.33		25.4	0.65	0.39	0.33
Ducks for meat and turkeys															
young ducks for meat		70.0	1.00	0.44	0.51		70.0	0.99	0.41	0.51		70.0	0.95	0.41	0.51
young turkeys for meat		45.0	1.84	0.79	0.91		45.0	1.85	0.82	0.91		45.0	1.70	0.75	0.91
Fur-bearing animals and rabbits															
rabbits (does) [2] [3]		377	7.9	3.7	8.1		377	7.6	3.4	8.1		377	7.6	3.4	8.1
minks (mother) [3]		104	4.2	2.4	0.7		104	3.5	1.9	0.7		104	3.3	2.0	0.7
foxes (mother) [3]		272	9.9	5.7	1.8		272	8.3	4.4	1.8		272	7.7	4.7	1.8

[1] Including piglets.
[2] Including rabbits for meat.
[3] Including male animals and animals raised for breeding.

Table 28
Manure production and nutrient excretion factors of pigs, poultry, fur-bearing animals and rabbits, 2002–2004

Section of the agricultural census	2002					2003					2004				
	manure quantity		nutrient excretion			manure quantity		nutrient excretion			manure quantity		nutrient excretion		
	liquid manure	solid manure	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	liquid manure	solid manure	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	liquid manure	solid manure	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
	kg/animal														
Pigs															
fattening pigs, 20 to 50 kg and >50 kg	1,200		11.6	4.3	9.3	1,200		11.9	4.4	9.3	1,200		11.7	4.2	7.4
breeding pigs, 20 to 50 kg and gilts not yet covered	1,300		13.1	5.8	10.1	1,300		14.2	6.4	8.1	1,300		13.2	6.3	8.6
covered sows, sows with piglets and other breeding sows [1]	5,100		29.9	13.7	21.2	5,100		29.9	13.6	18.5	5,100		28.0	13.2	18.4
boars >50 kg, not yet ready to breed	1,300		13.1	5.8	10.1	1,300		14.2	6.4	8.1	1,300		13.2	6.3	8.6
boars	3,200		23.1	10.3	15.3	3,200		23.8	11.7	11.5	3,200		23.7	12.7	11.5
Chickens															
broilers		11.0	0.53	0.18	0.28		10.9	0.53	0.20	0.25		10.9	0.52	0.19	0.25
broilers, breeding parents under 18 weeks		13.4	0.34	0.19	0.24		8.2	0.32	0.18	0.16		8.2	0.33	0.20	0.16
broilers, breeding females 18 weeks and older		23.0	1.08	0.55	0.47		20.6	1.05	0.54	0.43		20.6	1.11	0.54	0.43
laying hens under 18 weeks															
liquid manure	25.4		0.29	0.14	0.19	22.5		0.30	0.15	0.14	22.5		0.33	0.16	0.14
solid manure		9.1	0.29	0.14	0.19		7.6	0.30	0.15	0.14		7.6	0.33	0.16	0.14
laying hens 18 weeks and older															
liquid manure	63.5		0.66	0.40	0.34	53.4		0.70	0.40	0.33	53.4		0.71	0.38	0.33
solid manure		25.4	0.66	0.40	0.34		18.9	0.70	0.40	0.33		18.9	0.71	0.38	0.33
Ducks for meat and turkeys															
young ducks for meat		70.0	0.95	0.40	0.51		70.0	0.90	0.37	0.49		70.0	0.96	0.41	0.53
young turkeys for meat		45.0	1.68	0.75	0.91		45.0	1.76	0.96	0.82		45.0	1.74	0.90	0.86
Fur-bearing animals and rabbits															
rabbits (does) [2] [3]		377	7.6	3.3	8.1		377	7.8	3.6	7.8		377	8.0	3.7	7.9
minks (mother) [3]		104	3.0	2.0	0.7		104	2.9	1.8	0.7		104	2.8	1.9	0.7
foxes (mother) [3]		272	7.0	4.8	1.8		272	6.6	4.1	1.8		272	7.2	4.9	1.9

[1] Including piglets.
[2] Including rabbits for meat.
[3] Including male animals and animals raised for breeding.

Table 29
Manure production and nutrient excretion factors of pigs, poultry, fur-bearing animals and rabbits, 2005–2007

Section of the agricultural census	2005					2006					2007				
	manure quantity		nutrient excretion			manure quantity		nutrient excretion			manure quantity		nutrient excretion		
	liquid manure	solid manure	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	liquid manure	solid manure	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)	liquid manure	solid manure	Nitrogen (N)	Phosphate (P_2O_5)	Potassium (K_2O)
	kg/animal														
Pigs															
fattening pigs, 20 to 50 kg and >50 kg	1,200		12.3	4.6	7.5	1,200		12.6	4.9	7.7	1,200		12.6	4.8	7.9
breeding pigs, 20 to 50 kg and gilts not yet covered	1,300		14.3	6.7	8.1	1,300		14.6	6.6	8.1	1,300		14.2	6.2	8.1
covered sows, sows with piglets and other breeding sows [1]	5,100		30.7	14.9	18.5	5,100		30.8	14.8	18.7	5,100		31.5	14.6	19.1
boars >50 kg, not yet ready to breed	1,300		14.3	6.7	8.1	1,300		14.6	6.6	8.1	1,300		14.2	6.2	8.1
boars	3,200		23.7	12.7	11.5	3,200		23.9	11.5	11.5	3,200		23.3	11.5	11.5
Chickens															
broilers		10.9	0.55	0.20	0.25		10.9	0.53	0.19	0.25		10.9	0.53	0.19	0.26
broilers, breeding parents under 18 weeks		8.2	0.32	0.20	0.16		8.2	0.33	0.20	0.16		8.2	0.33	0.20	0.16
broilers, breeding females 18 weeks and older		20.6	1.10	0.55	0.43		20.6	1.10	0.57	0.43		20.6	1.13	0.56	0.44
laying hens under 18 weeks															
liquid manure	22.5		0.32	0.16	0.14	22.5		0.33	0.17	0.14	22.5		0.34	0.17	0.14
solid manure		7.6	0.32	0.16	0.14		7.6	0.33	0.17	0.14		7.6	0.34	0.17	0.14
laying hens 18 weeks and older															
liquid manure	53.4		0.71	0.38	0.33	53.4		0.74	0.40	0.33	53.4		0.74	0.39	0.33
solid manure		18.9	0.71	0.38	0.33		18.9	0.74	0.40	0.33		18.9	0.74	0.39	0.33
Ducks for meat and turkeys															
young ducks for meat		70.0	0.89	0.41	0.52		70.0	0.91	0.38	0.52		70.0	0.85	0.33	0.49
young turkeys for meat		45.0	1.81	0.99	0.87		45.0	1.66	0.89	0.87		45.0	1.69	0.92	0.90
Fur-bearing animals and rabbits															
rabbits (does) [2] [3]		377	8.2	3.8	8.0		377	8.1	4.1	8.0		377	8.0	3.7	7.8
minks (mother) [3]		104	2.7	1.7	0.7		104	2.6	1.5	0.7		104	2.5	1.2	0.7
foxes (mother) [3]		272	6.9	4.3	1.9		272	6.5	3.9	1.9		272	6.4	3.3	1.9

[1] Including piglets.
[2] Including rabbits for meat.
[3] Including male animals and animals raised for breeding.

Table 30
Cattle, sheep and goats: consumption and composition of feed, 1990–1992

	1990					1991					1992				
	con sump-tion	composition				con-sump-tion	composition				con sump tion	composition			
		Nitrogen (N)	Phos-phorus (P)	Potas-sium (K)	VEM [1]		Nitrogen (N)	Phos-phorus (P)	Potas-sium (K)	VEM [1]		Nitrogen (N)	Phos-phorus (P)	Potas-sium (K)	VEM [1]
Forage (dry matter)	*mln kg*	*g/kg*			*VEM/kg*	*mln kg*	*g/kg*			*VEM/kg*	*mln kg*	*g/kg*			*VEM/kg*
Grass silage	4,308	31.0	3.6	28.5	911	4,616	32.6	4.0	32.7	868	4,080	30.9	3.8	32.8	838
Hay	380	23.2	3.0	25.0	790	489	23.2	3.0	25.0	790	393	23.2	3.0	25.0	790
Maize silage	2,471	13.8	2.5	14.9	898	2,174	13.1	2.5	14.9	912	2,150	13.1	1.7	14.1	913
Meadow grass	5,362	42.9	4.3	35.9	975	5,737	42.1	3.9	38.0	995	6,421	40.3	4.0	35.8	973
Concentrates															
Standard concentrate [2]	3,339	26.2	4.8	14.4	940	3,314	27.2	4.8	15.4	940	3,470	27.8	4.8	15.4	940
Protein-rich concentrate [2] [3]	600	38.4	6.5	14.4	940	598	39.1	6.5	15.4	940	507	41.4	6.8	15.4	940
Concentrates for meat bulls	349	34.3	6.0	14.4	940	358	35.6	6.0	15.4	940	371	35.7	6.8	15.4	940
Milk substitutes	417	32.1	6.8	14.7	–	425	32.1	6.8	14.7	–	437	32.1	6.8	14.7	–
Wet feedstuffs (dm)	441	28.5	2.8	8.0	1,000	484	27.5	3.0	8.4	1,000	454	26.9	3.6	9.7	1,000

[1] Energy value units for milk production (VEM).
[2] Including supplementary feed and raw compound feed materials.
[3] Protein–rich feed of 120 DVE and higher.

Table 31
Cattle, sheep and goats: consumption and composition of feed, 1993–1995

	1993					1994					1995				
	con sump-tion	composition				con-sump-tion	composition				con-sump tion	composition			
		Nitrogen (N)	Phos-phorus (P)	Potas-sium (K)	VEM [1]		Nitrogen (N)	Phos-phorus (P)	Potas-sium (K)	VEM [1]		Nitrogen (N)	Phos-phorus (P)	Potas-sium (K)	VEM [1]
Forage (dry matter)	*mln kg*	*g/kg*			*VEM/kg*	*mln kg*	*g/kg*			*VEM/kg*	*mln kg*	*g/kg*			*VEM/kg*
Grass silage	4,540	31.7	4.0	33.5	861	4,307	34.2	4.2	38.9	863	3,851	32.3	4.1	35.5	839
Hay	290	23.2	3.0	25.0	790	360	23.2	3.0	25.0	790	408	23.2	3.0	25.0	790
Maize silage	2,388	13.3	1.9	12.5	919	2,684	12.6	2.1	13.0	872	2,510	13.1	1.9	14.2	921
Meadow grass	5,544	41.1	4.5	39.8	991	5,036	41.4	4.2	37.7	1,003	5,045	41.3	4.0	36.7	1,008
Concentrates															
Standard concentrate [2]	3,228	28.5	4.9	15.9	940	3,259	27.1	4.9	15.2	940	3,434	29.4	5.1	15.0	940
Protein-rich concentrate [2] [3]	536	42.3	6.8	15.9	940	588	43.5	6.5	17.8	940	730	44.2	6.2	17.1	940
Concentrates for meat bulls	359	36.8	6.6	15.9	940	353	32.5	6.3	14.4	940	401	34.1	6.3	15.1	940
Milk substitutes	448	32.1	6.8	14.7	–	465	32.1	6.8	14.7	–	416	32.8	6.9	16.7	–
Wet feedstuffs (dm)	539	22.7	3.3	13.2	1,000	487	26.2	3.1	9.4	1,000	546	21.5	3.0	10.9	1,000

[1] Energy value units for milk production (VEM).
[2] Including supplementary feed and raw compound feed materials.
[3] Protein–rich feed of 120 DVE and higher.

Table 32
Cattle, sheep and goats: consumption and composition of feed, 1996–1998

	1996					1997					1998				
	con sump-tion	composition				con-sump-tion	composition				con-sump tion	composition			
		Nitrogen (N)	Phos-phorus (P)	Potas-sium (K)	VEM [1]		Nitrogen (N)	Phos-phorus (P)	Potas-sium (K)	VEM [1]		Nitrogen (N)	Phos-phorus (P)	Potas-sium (K)	VEM [1]
Forage (dry matter)	*mln kg*	*g/kg*			*VEM/kg*	*mln kg*	*g/kg*			*VEM/kg*	*mln kg*	*g/kg*			*VEM/kg*
Grass silage	3,954	31.0	3.8	34.2	874	3,588	36.3	3.7	37.3	872	4,345	33.8	4.2	36.5	846
Hay	339	23.2	3.0	25.0	790	380	23.2	3.0	25.0	790	240	23.2	3.0	25.0	790
Maize silage	2,325	12.8	1.8	14.2	924	2,479	12.6	1.9	13.0	927	3,206	11.8	1.8	12.7	942
Meadow grass	4,929	44.5	3.6	38.0	1,033	4,888	42.8	4.2	37.3	998	3,604	41.6	4.3	37.6	1,020
Concentrates															
Standard concentrate [2]	3,434	28.2	4.7	14.8	940	3,278	26.6	4.7	14.0	940	2,959	27.4	4.5	13.6	940
Protein-rich concentrate [2] [3]	762	39.5	5.6	16.7	940	656	37.7	6.0	16.8	940	789	36.5	5.5	16.4	940
Concentrates for meat bulls	343	33.4	5.9	15.8	940	326	33.0	6.1	15.4	940	321	31.1	5.3	17.0	940
Milk substitutes	407	32.6	6.5	16.7	–	413	30.9	6.6	16.7	–	447	31.0	6.8	17.0	–
Wet feedstuffs (dm)	414	25.1	3.7	8.4	1,000	623	20.4	2.8	9.4	1,000	523	23.0	3.3	9.2	1,000

[1] Energy value units for milk production (VEM).
[2] Including supplementary feed and raw compound feed materials.
[3] Protein–rich feed of 120 DVE and higher.

Table 33
Cattle, sheep and goats: consumption and composition of feed, 1999–2001

	1999					2000					2001				
	consumption	composition				consumption	composition				consumption	composition			
		Nitrogen (N)	Phosphorus (P)	Potassium (K)	VEM [1]		Nitrogen (N)	Phosphorus (P)	Potassium (K)	VEM [1]		Nitrogen (N)	Phosphorus (P)	Potassium (K)	VEM [1]
Forage (dry matter)	*mln kg*	*g/kg*			*VEM/kg*	*mln kg*	*g/kg*			*VEM/kg*	*mln kg*	*g/kg*			*VEM/kg*
Grass silage	4,147	32.2	4.4	36.4	845	4,263	32.0	4.1	33.3	879	4,090	32.0	4.5	35.6	879
Hay	294	23.2	3.0	25.0	790	393	23.2	3.0	25.0	790	318	23.2	3.0	25.0	790
Maize silage	2,650	12.2	1.9	12.2	950	2,790	12.2	2.0	12.0	982	2,613	12.6	2.1	11.2	971
Meadow grass	4,437	36.0	4.3	36.9	1,012	3,794	37.1	4.5	37.0	1,005	4,120	36.6	4.3	35.9	994
Concentrates															
Standard concentrate [2]	2,799	28.1	4.9	12.8	940	2,864	28.2	5.0	12.9	940	2,938	27.0	4.8	12.9	940
Protein-rich concentrate [2] [3]	689	35.7	5.3	15.1	940	522	36.2	5.8	15.4	940	442	36.4	5.4	16.3	940
Concentrates for meat bulls	312	30.7	5.3	16.7	940	304	30.8	5.3	16.5	940	300	30.1	5.2	13.9	940
Milk substitutes	460	30.1	6.5	17.0	–	471	31.4	6.1	17.0	–	444	31.4	6.1	17.0	–
Wet feedstuffs (dm)	457	22.9	3.3	6.6	1,000	601	20.8	3.1	10.7	1,000	435	23.5	3.7	7.1	1,000

[1] Energy value units for milk production (VEM).
[2] Including supplementary feed and raw compound feed materials.
[3] Protein–rich feed of 120 DVE and higher.

Table 34
Cattle, sheep and goats: consumption and composition of feed, 2002–2004

	2002					2003					2004				
	consumption	composition				consumption	composition				consumption	composition			
		Nitrogen (N)	Phosphorus (P)	Potassium (K)	VEM [1]		Nitrogen (N)	Phosphorus (P)	Potassium (K)	VEM [1]		Nitrogen (N)	Phosphorus (P)	Potassium (K)	VEM [1]
Forage (dry matter)	*mln kg*	*g/kg*			*VEM/kg*	*mln kg*	*g/kg*			*VEM/kg*	*mln kg*	*g/kg*			*VEM/kg*
Grass silage	3,885					4,697					4,326				
harvest year t-1		30.2	4.0	32.9	894		29.7 [2]	4.3	35.0	863		28.1 [2]	3.9	33.4	848
harvest year t												30.6 [2]	4.1	35.4	896
Hay	168	23.2	3.0	25.0	790	427	23.2 [2]	3.0	25.0	790	374	23.2 [2]	3.0	25.0	790
Snijmaiskuil	2,850					2,737					2,875				
harvest year t-1		12.6	2.1	12.1	954		13.1	2.1	12.5	958		12.5	1.9	11.8	951
harvest year t												12.2	2.0	11.8	960
Meadow grass	3,940	36.2	4.4	37.2	990	3,131	36.0 [3]	4.1	36.2	977	3,307	33.0 [3]	4.1	35.1	970
Concentrates															
Standard concentrate [4]	2,968	27.8	4.9	14.6	940	2,898	27.9	4.9	14.5	940	2,908	28.3	4.9	14.2	940
Protein-rich concentrate [4] [5]	355	39.6	5.6	17.4	940	399	38.4	5.7	17.0	940	380	38.7	5.7	15.8	940
Concentrates for meat bulls	287	30.1	5.1	13.9	940	276	30.1	5.1	14.0	940	248	31.9	5.3	14.4	940
Milk substitutes	416	31.4	6.1	17.0	–	418	31.4	6.1	17.0	–	393	30.3	6.0	17.0	–
Wet feedstuffs (dm)	435	21.7	3.4	8.4	1,000	455	21.3	3.1	8.4	1,000	402	21.5	3.1	8.9	1,000

[1] Energy value units for milk production (VEM).
[2] For fattening cows, meadow cows and suckler cows, the N–content must be reduced by 10%.
[3] For young cattle older than 1 year, fattening cows, meadow cows, suckler cow and sheep, the N–content must be reduced by 20%.
[4] Including supplementary feed and raw compound feed materials.
[5] Protein–rich feed of 120 DVE and higher.

Table 35
Cattle, sheep, goats, horses and ponies: consumption and composition of feed, 2005–2007

	2005					2006					2007				
	consumption	composition				consumption	composition				consumption	composition			
		Nitrogen (N)	Phosphorus (P)	Potassium (K)	VEM [1]		Nitrogen (N)	Phosphorus (P)	Potassium (K)	VEM [1]		Nitrogen (N)	Phosphorus (P)	Potassium (K)	VEM [1]
	mln kg	*g/kg*			*VEM/kg*	*mln kg*	*g/kg*			*VEM/kg*	*mln kg*	*g/kg*			*VEM/kg*
Forage (dry matter)															
Grass silage	3,778					3,829					4,339				
harvest year t-1		30.6[2]	4.1	35.4	896		28.2[2]	4.0	34.0	897		29.9[2]	3.9	33.0	876
harvest year t		28.2[2]	4.0	34.0	897		29.9[2]	3.9	33.0	876		28.2[2]	4.0	33.0	876
Hay	583	23.2[2]	3.0	25.0	790	321	23.2[2]	3.0	25.0	800	227	21.1[2]	4.2	34.1	790
Hay for horses and ponies						111	25.6	3.0	25.0		116	19.2	4.2	34.1	
Maize silage	2,845					2,992					2,936				
harvest year t-1		12.2	2.0	11.8	960		12.0	2.0	12.0	940		13.3	2.2	12.0	975
harvest year t		12.0	2.0	12.0	940		13.3	2.2	12.0	975		11.7	2.1	11.0	963
Meadow grass	3,598	33.3[3]	4.2	36.0	974	3,743	32.0[3]	4.1	36.0	956	3,653	30.6[3]	4.1	34.0	930
Meadow grass for horses and ponies						121	29.1	4.1	30.9		126	29.1	4.1	30.4	
Concentrates															
Standard concentrate [4]	2,754	28.5	5.0	15.0	940	2,713	28.6	4.9	14.7	940	2,692	27.9	4.5	12.9	940
Protein-rich concentrate [4] [5]	324	38.9	6.0	16.3	940	307	38.5	5.8	16.3	940	309	38.3	5.5	15.6	940
Concentrates for meat bulls	263	31.7	5.3	16.3	940	266	31.2	5.4	15.0	940	295	31.3	5.2	13.2	940
Milk substitutes	425	30.4	6.0	17.0	–	430	30.0	6.1	17.0	–	416	29.7	5.9	17.0	–
Wet feedstuffs (dm)	417	23.3	3.4	10.4	1,000	418	24.9	3.7	9.7	1,000	391	24.9	3.8	8.4	1,000
Concentrate for horses and ponies [6]						47	18.7	5.3	7.6		49	18.7	5.3	7.6	

[1] Energy value units for milk production (VEM).
[2] For fattening cows, meadow cows and suckler cows, the N–content must be reduced by 10%.
[3] For young cattle older than 1 year, fattening cows, meadow cows, suckler cow and sheep, the N–content must be reduced by 20%.
[4] Including supplementary feed and raw compound feed materials.
[5] Protein–rich feed of 120 DVE and higher.
[6] Weighted average of several types of concentrate.

Table 36
Production of forage, 1990–1999

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
	kg dry matter per hectare [1]									
South and East Netherlands										
Grassland production [2]	12,223	12,577	13,538	13,132	11,067	11,136	11,119	11,926	10,025	11,433
of which:										
grass silage and hay	5,522	5,201	5,258	5,678	4,607	4,652	4,323	5,570	5,757	5,368
meadow grass	6,701	7,376	8,280	7,454	6,460	6,484	6,796	6,356	4,268	6,065
Maize silage	11,600	11,700	11,900	12,900	11,800	11,400	12,300	15,000	13,000	14,900
North and West Netherlands										
Grassland production [2]	10,966	11,417	12,670	11,210	10,353	10,613	9,419	10,908	10,066	10,053
of which:										
grass silage and hay	5,385	5,436	5,774	5,531	4,779	5,016	4,391	5,348	5,615	5,121
meadow grass	5,581	5,981	6,896	5,679	5,574	5,597	5,028	5,560	4,451	4,932
Maize silage	12,200	10,600	12,300	11,900	12,600	12,300	11,400	15,000	13,300	15,000
Netherlands										
Grassland production [2]	11,563	11,966	13,080	12,115	10,690	10,860	10,215	11,380	10,047	10,681
of which:										
grass silage and hay	5,450	5,325	5,530	5,600	4,698	4,844	4,359	5,451	5,681	5,233
meadow grass	6,113	6,641	7,550	6,515	5,992	6,016	5,856	5,929	4,366	5,448
Maize silage	11,700	11,600	11,900	12,800	11,900	11,500	12,100	15,000	13,100	15,000

[1] Gross production, including grazing losses, cutting losses and preservation losses.
[2] Calculated grassland production for consumption by cattle, sheep and goats in the agricultural census.

Table 37
Production of forage, 2000–2007

	2000	2001	2002	2003	2004	2005	2006	2007
	kg dry matter per hectare [1]							
South and East Netherlands								
Grassland production [2]	10,720	10,910	10,971	9,248	10,519	11,051	10,310	10,812
of which:								
grass silage and hay	5,864	5,622	6,211	5,531	6,485	6,180	5,697	6,428
meadow grass	4,856	5,288	4,760	3,717	4,033	4,871	4,614	4,384
Maize silage	13,800	14,400	14,100	14,300	14,100	14,200	14,300	15,000
North and West Netherlands								
Grassland production [2]	9,962	10,357	10,763	9,160	10,594	10,206	10,326	11,056
of which:								
grass silage and hay	5,420	5,255	5,697	4,973	6,246	5,848	5,286	5,829
meadow grass	4,542	5,102	5,065	4,187	4,348	4,358	5,041	5,227
Maize silage	14,000	14,200	14,300	14,700	14,200	14,700	14,500	15,000
Netherlands								
Grassland production [2]	10,310	10,609	10,858	9,200	10,560	10,584	10,319	10,924
of which:								
grass silage and hay	5,624	5,422	5,932	5,228	6,356	5,997	5,474	6,153
meadow grass	4,686	5,187	4,926	3,972	4,204	4,588	4,845	4,771
Maize silage	13,800	14,300	14,200	14,400	14,100	14,400	14,400	15,000

[1] Gross production, including grazing losses, cutting losses and preservation losses.
[2] Calculated grassland production for consumption by cattle, sheep and goats in the agricultural census. In 2006 en 2007 consumption by horses and ponies is included.

Table 38
Cattle, sheep, goats, horses and ponies: nutrient retention en nutrient contents of animals and animal products, 2007

	Live weight	Nitrogen (N)	Phosphorus (P)	Potassium (K)
	kg	*g/kg live weight*		
Calves	44	29.4	8.0	2.1
White-veal calves	237	27.3	5.9	1.7
Rosé-veal calves	345	26.4	6.9	1.7
Meat bulls				
starting weight	44	29.4	8.0	2.1
12 months	450	28.5	7.5	1.9
final body weight– crossbreed	625	27.0	7.4	1.9
final body weight– pure-bred	700	27.0	7.4	1.9
Young dairy cattle, 1 year	320	24.1	7.4	2.0
Young dairy cattle, 2 years and older	525	23.1	7.4	2.0
Dairy cows	600	22.5	7.4	2.0
Suckler cows, fattening- and meadow cows	650	22.5	7.4	2.0
Breeding bulls				
1 year	400	25.6	7.4	2.0
3.5 years	1,100	25.3	7.4	2.0
Sheep				
sheep	75	25.0	7.8	1.7
lamb for meat	42	26.2	5.2	1.7
Goats				
milch goat	70	24.0	7.9	1.7
lamb for meat	10	24.0	6.3	1.7
Horses	540	29.9	7.5	2.0
Ponies	285	29.9	7.5	2.0
	kg/animal/year	*g/kg*		
Cow's milk [1)]	7,879	5.5	1.0	1.6
Goats's milk	800	5.0	1.1	2.0
Wool	3	122	0.11	1.5

Sources:
– WUM, 1994a.
– Heeres-van der Tol, J.J., 2001.
– Tamminga et al., 2000.
– Kemme et al., 2005a.
– Kemme et al., 2005b.

[1)] Updated annually. N–content = milk protein (g/kg)/6.38.

Table 39
Pigs, poultry, rabbits and fur-bearing animals: nutrient contents of compound feed, 1990–1994

	1990			1991			1992			1993			1994		
	Nitrogen (N)	Phosphorus (P)	Potassium (K)	Nitrogen (N)	Phosphorus (P)	Potassium (K)	Nitrogen (N)	Phosphorus (P)	Potassium (K)	Nitrogen (N)	Phosphorus (P)	Potassium (K)	Nitrogen (N)	Phosphorus (P)	Potassium (K)
	g/kg														
Pig feed [1]															
pigs raised for breeding [2]	26.7	6.4	11.3	26.9	6.4	11.7	26.7	6.5	11.6	26.3	6.5	12.0	26.1	6.1	11.9
sows	27.4	6.6	11.3	26.2	6.4	11.7	26.7	6.4	11.6	26.3	6.4	12.0	25.8	6.0	11.5
boars	26.2	6.6	11.3	25.7	6.6	11.7	26.6	6.9	11.6	25.8	5.8	12.0	24.3	6.2	12.2
fattening pigs [2]	26.9	5.1	11.3	26.4	5.2	11.7	27.3	5.1	11.6	27.1	5.1	12.0	28.1	5.0	11.8
Poultry feed															
broiler feed [3]	35.6	5.8	10.6	35.9	5.7	10.3	35.7	5.7	10.3	35.1	5.8	10.0	34.2	5.7	10.0
rearing feed for broiler parent stock	30.5	6.7	8.4	31.3	7.3	9.4	33.3	6.5	9.5	31.3	6.6	9.3	30.5	6.7	10.3
feed for broiler parent stock	26.9	6.1	8.4	28.4	6.3	9.4	29.4	6.2	9.5	30.6	6.2	9.3	28.2	6.1	9.4
rearing feed for laying hens	30.5	6.7	8.4	31.3	7.3	9.4	33.3	6.5	9.5	31.3	6.6	9.3	30.5	6.7	10.3
feed for laying hens	26.6	6.0	8.4	28.2	6.2	9.4	29.1	6.2	9.5	30.5	6.2	9.3	28.0	6.0	9.3
duck feed	28.0	6.6	8.5	28.0	6.6	8.5	28.0	6.6	8.5	28.0	6.6	8.5	28.0	6.6	8.5
turkey feed	32.0	6.7	8.6	32.0	6.7	8.6	32.0	6.7	8.6	32.0	6.7	8.6	32.0	6.7	8.6
Rabbit feed and feed for fur-beraring animals															
rabbit feed	29.4	6.8	8.9	29.4	6.8	8.9	29.4	6.8	8.9	29.4	6.8	8.9	29.4	6.8	8.9
feed for fur-bearing animals [4]	17.5	5.2	0.8	17.5	5.2	0.8	17.5	5.2	0.8	17.5	5.2	0.8	17.5	5.2	0.8

1) Including wet feedstuffs and raw materials.
2) Including starter feed.
3) Including simple wheat.
4) Fur–bearing animals are given feed with a dry matter content of 30–40%, so the nutrient levels in the feed cannot simply be compared with the nutrient levels of other feed types.

Table 40
Pigs, poultry, rabbits and fur-bearing animals: nutrient contents of compound feed, 1995–1999

	1995			1996			1997			1998			1999		
	Nitrogen (N)	Phosphorus (P)	Potassium (K)	Nitrogen (N)	Phosphorus (P)	Potassium (K)	Nitrogen (N)	Phosphorus (P)	Potassium (K)	Nitrogen (N)	Phosphorus (P)	Potassium (K)	Nitrogen (N)	Phosphorus (P)	Potassium (K)
	g/kg														
Pig feed [1]															
pigs raised for breeding [2]	27.3	5.7	11.8	26.6	5.5	11.7	26.4	5.3	12.3	25.7	5.5	11.5	26.5	5.4	11.9
sows	27.0	5.7	11.4	26.3	5.4	11.3	26.4	5.4	11.0	25.4	5.4	10.2	25.9	5.1	10.6
boars	25.8	5.7	12.1	25.0	5.2	12.4	24.1	5.3	12.7	23.8	5.2	11.8	23.7	4.8	12.2
fattening pigs [2]	27.8	4.9	11.8	27.4	4.8	11.8	27.4	4.8	11.7	26.9	4.7	11.3	27.3	4.6	11.3
Poultry feed															
broiler feed [3]	36.7	5.7	9.7	35.9	5.6	9.7	34.3	5.7	10.2	32.1	5.3	9.0	32.8	5.5	8.3
rearing feed for broiler parent stock	30.3	6.4	10.1	28.9	5.7	10.9	30.5	5.9	12.0	28.5	5.7	11.1	27.7	5.6	10.2
feed for broiler parent stock	28.5	5.8	8.2	28.6	5.5	9.0	26.6	5.3	9.1	26.5	5.4	8.4	26.6	5.4	8.4
rearing feed for laying hens	30.3	6.4	10.1	28.9	5.7	10.9	30.5	5.9	12.0	28.5	5.7	11.1	27.7	5.6	10.2
feed for laying hens	28.4	5.7	8.1	28.6	5.5	8.9	26.3	5.3	8.9	26.3	5.4	8.2	26.1	5.4	7.2
duck feed	27.8	6.5	8.7	27.8	6.5	8.7	27.8	6.5	8.7	28.1	5.8	8.7	27.7	5.6	8.0
turkey feed	31.2	6.2	8.1	31.2	6.2	8.1	31.2	6.2	8.1	30.4	6.3	8.1	30.4	6.1	8.1
Rabbit feed and feed for fur-beraring animals															
rabbit feed	26.9	5.9	14.2	26.9	5.9	14.2	26.9	5.9	14.2	26.4	5.3	14.2	26.9	5.5	16.0
feed for fur-bearing animals [4]	17.5	5.2	0.8	17.5	5.5	2.6	17.5	5.5	2.6	18.4	4.7	2.6	19.0	4.6	2.6

1) Including wet feedstuffs and raw materials.
2) Including starter feed.
3) Including simple wheat.
4) Fur–bearing animals are given feed with a dry matter content of 30–40%, so the nutrient levels in the feed cannot simply be compared with the nutrient levels of other feed types.

Table 41
Pigs, poultry, rabbits and fur-bearing animals: nutrient contents of compound feed, 2000–2004

	2000			2001			2002			2003			2004		
	Nitrogen (N)	Phosphorus (P)	Potassium (K)	Nitrogen (N)	Phosphorus (P)	Potassium (K)	Nitrogen (N)	Phosphorus (P)	Potassium (K)	Nitrogen (N)	Phosphorus (P)	Potassium (K)	Nitrogen (N)	Phosphorus (P)	Potassium (K)
	g/kg														
Pig feed [1]															
pigs raised for breeding [2]	27.0	5.7	11.9	25.2	5.2	11.9	25.7	5.1	11.9	25.6	5.2	9.1	24.3	5.1	9.5
sows	25.9	5.3	10.6	24.7	5.0	10.5	25.2	5.2	10.5	25.1	5.1	9.2	24.1	5.0	9.1
boars	24.2	5.2	12.2	24.4	5.0	12.2	24.3	4.8	12.2	24.6	5.3	8.9	24.5	5.7	8.9
fattening pigs [2]	26.3	4.6	11.3	25.3	4.4	11.3	25.1	4.5	11.3	25.5	4.6	11.3	25.1	4.5	9.0
Poultry feed															
broiler feed [3]	32.0	5.5	8.5	30.9	4.9	8.5	32.2	4.9	8.5	32.0	5.1	7.8	31.0	5.0	7.6
rearing feed for broiler parent stock	26.9	5.6	10.2	25.2	5.4	10.2	25.5	5.4	10.2	25.2	5.2	7.3	25.6	5.7	7.0
feed for broiler parent stock	25.4	5.3	8.2	24.6	5.0	7.4	24.6	5.0	7.4	23.5	4.8	6.7	24.5	4.8	6.7
rearing feed for laying hens	26.9	5.6	10.2	25.2	5.4	10.2	25.5	5.4	10.2	25.2	5.2	7.3	26.3	5.6	7.3
feed for laying hens	25.4	5.3	7.2	24.5	5.0	7.2	24.5	5.0	7.2	24.0	4.9	7.0	25.1	4.7	7.0
duck feed	27.5	5.4	8.0	26.8	5.4	8.1	26.8	5.3	8.1	26.7	5.2	8.1	26.7	5.2	8.1
turkey feed	30.5	6.2	8.1	29.0	5.9	8.1	28.8	5.9	8.1	29.6	6.0	7.4	28.6	5.6	7.4
Rabbit feed and feed for fur-berearing animals															
rabbit feed	26.2	5.2	16.0	26.3	5.2	16.0	26.3	5.1	16.0	26.6	5.3	15.0	26.6	5.4	15.0
feed for fur-bearing animals [4]	16.3	3.7	2.6	15.4	3.9	2.6	14.2	4.0	2.6	13.5	3.5	2.6	14.0	3.9	2.6

[1] Including wet feedstuffs and raw materials.
[2] Including starter feed.
[3] Including simple wheat.
[4] Fur–bearing animals are given feed with a dry matter content of 30–40%, so the nutrient levels in the feed cannot simply be compared with the nutrient levels of other feed types.

Table 42
Pigs, poultry, rabbits and fur-bearing animals: nutrient contents of compound feed, 2005–2007

	2005			2006			2007		
	Nitrogen (N)	Phosphorus (P)	Potassium (K)	Nitrogen (N)	Phosphorus (P)	Potassium (K)	Nitrogen (N)	Phosphorus (P)	Potassium (K)
	g/kg								
Pig feed [1]									
pigs raised for breeding [2]	25.8	5.4	9.1	26.1	5.3	9.1	25.6	5.1	9.1
sows	25.6	5.5	9.2	25.5	5.4	9.2	25.6	5.3	9.2
boars	24.5	5.7	8.9	24.7	5.2	8.9	24.2	5.2	8.9
fattening pigs [2]	25.7	4.7	9.1	25.8	4.8	9.2	25.6	4.7	9.3
Poultry feed									
broiler feed [3]	31.6	5.0	7.5	31.2	4.9	7.5	30.7	4.9	7.5
rearing feed for broiler parent stock	25.3	5.7	7.0	25.4	5.7	7.0	25.7	5.7	7.0
feed for broiler parent stock	24.4	4.9	6.7	24.4	5.0	6.7	24.7	4.9	6.7
rearing feed for laying hens	26.0	5.6	7.3	26.6	5.7	7.3	26.6	5.7	7.3
feed for laying hens	25.0	4.7	7.0	25.1	4.8	7.0	25.5	4.8	7.0
duck feed	26.1	5.3	8.1	26.4	5.1	8.1	26.3	4.9	8.1
turkey feed	29.1	5.9	7.4	27.7	5.5	7.4	27.5	5.5	7.4
Rabbit feed and feed for fur-berearing animals									
rabbit feed	26.8	5.5	15.0	26.6	5.7	15.0	26.8	5.4	15.0
feed for fur-bearing animals [4]	13.6	3.5	2.6	13.0	3.2	2.6	12.8	2.8	2.6

[1] Including wet feedstuffs and raw materials.
[2] Including starter feed.
[3] Including simple wheat.
[4] Fur–bearing animals are given feed with a dry matter content of 30–40%, so the nutrient levels in the feed cannot simply be compared with the nutrient levels of other feed types.

Table 43
Pigs, poultry, rabbits and fur-bearing animals: nutrient retention and nutrient contents of animals, 2007

	Live weight	Nitrogen (N)	Phosphorus (P)	Potassium (K)
	kg	*g/kg live weight*		
Pigs				
stillborn piglets	1.3	18.7	6.2	1.81
death loss of piglets	2.8	23.1	5.4	2.64
delivered piglets [1)]	25.2	24.8	5.3	2.42
fattening pigs [1)]	117	25.0	5.4	2.28
replacement gilts	140	24.9	5.4	2.25
sows	220	25.0	5.4	2.08
boars	325	25.0	5.4	2.04
Chickens				
white laying hens– 17 weeks	1,285	28.0	5.5	1.91
white laying hens– adult weight	1,600	28.0	5.6	1.85
middleweight laying hens– 17 weeks	1,520	28.0	5.5	1.65
middleweight laying hens– adult weight	1,800	28.0	5.6	1.85
female broiler breeders– 18 weeks	2,000	33.4	4.9	2.5
female broiler breeders– adult weight	3,700	28.4	5.4	2.2
male broiler breeders– 18 weeks	2,750	34.5	5.4	2.5
male broiler breeders– adult weight	4,800	35.4	5.7	2.5
broilers	2,220	27.8	4.4	2.4
Ducks and turkeys				
ducks raised for meat	3,100	25.9	5.3	2.00
turkeys raised for meat, female	10,000	33.0	5.0	2.04
turkeys raised for meat, male	20,000	33.0	5.2	2.04
Rabbits and fur-bearing animals				
rabbits		29.1	6.0	2.0
foxes		30.0	6.0	2.0
minks		27.9	6.0	2.0
Eggs				
laying sector		18.5	1.7	1.2
meat sector		19.3	1.9	1.2

Sources:
– KWIN
– Jongbloed, A.W. et al, 2005.
– Jongbloed en Kemme, 2002a en 2002b.

[1)] The weight is annually updated based on Agrovision.