

# **Like Phoenix from the ashes**

## **- The recovery of the Dutch egg industry -**

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The outbreak of Avian Influenza in 2003 severely hit the Dutch egg industry and the associated industries. Even though egg farmers were financially compensated, they were confronted with considerable economic losses as it often took several months until new pullets could be placed. There was, however, no compensation for the associated industries such as feedmills or egg processing plants. Between 2000, when egg production in the Netherlands reached a maximum of 10 billion eggs or 668,000 t, and 2003, the production volume decreased to 6.6 billion eggs or 463,000 t. Even though egg production eight years after the outbreak of AI was still 500 mill. eggs lower than 2000, Dutch egg producers could stabilise shell eggs for consumption exports again and even double the export volume of egg products.

It is the main target of this analysis to document the recovery of the Dutch egg industry and to analyse its recent sectoral and regional patterns as well as its foreign trade relations.

### **1. The position of the egg industry in Dutch agriculture**

The Netherlands have been the leading egg exporting country for years, its contribution to the global trade volume was 24 % in 2008, and they are the major supplier for EU member countries. But the role of the egg industry in Dutch agriculture must not be overestimated. In 2008, the value of egg production was 411 mill. € or 1.8 % of the total value of agricultural production. It was lower than the value of poultry meat production which was as high as 794 mill. €. Horticulture and greenhouse production are dominating Dutch agriculture, followed by red

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meat and milk production. Nevertheless, the egg industry is the main income source for many farms in the centre of production.

Table 1:

The position of the egg industry in Dutch agriculture (2008)

(Source: PVE 2009, p. 3)

<b>Branch of production</b>	<b>Value of production (mill. €)</b>	<b>Share (%)</b>
Horticulture and greenhouses	8,948	38.2
Red meat	4,370	18.7
Milk	4,147	17.7
Plant production except crop farming	2,522	10.8
Crop farming	2,207	9.4
Poultry meat	794	3.4
Eggs	411	1.8
<b>Total</b>	<b>23,399</b>	<b>100.0</b>

## **2. Development, sectoral and regional patterns of laying hen husbandry**

In 2008, the laying hen population in the Netherlands was as high as 44.2 mill.; 11.3 mill. were pullets (up to 18 weeks) and 32.9 mill. hens of laying age. The total number of laying hens was only 0.5 % higher than in 2000, but 7.8 % higher than in 2005. This shows that the dramatic decrease to only 30.5 mill. laying hens in 2003, a result of the outbreak of Avian Influenza, could be compensated. This is also true for hens older than 18 weeks. Their number increased by 1.1 % between 2000 and 2008 and by 7.9 % between 2005 and 2008 (table 2).

Table 2:

Development of the laying hen population in the Netherlands (2000 - 2008)

(Source: Centraal Bureau voor de Statistiek)

<b>Year</b>	<b>Pullets (up to 18 weeks)</b>	<b>Laying hens (&gt; 18 weeks)</b>	<b>Laying hens total</b>
2000	11,463.4	32,573.0	44,036.4
2003	6,551.1	23,946.9	30,498.0
2005	10,534.9	30,512.8	41,047.7
2006	10,797.1	30,844.9	41,624.0
2007	9,798.0	31,426.8	41,224.8
2008	11,281.1	32,923.1	44,241.2
<b>Change (%)</b>	<b>- 1.6</b>	<b>+ 1.1</b>	<b>+ 0.5</b>

The outbreak of Avian Influenza in 2003 and the resulting economic problems caused a dramatic reduction of the number of egg farms. Between 2000 and 2008 their number decreased by 864 or 36.9 %. Most of the farms (566) quit production between 2000 and 2005. This led to a fast increase of the average flock size. Whereas the average size was 19,213 hens in 2000, it increased to 30,596 in 2008. Quite obviously, mostly smaller farms gave up egg production (table 3). The data for 2003 cannot be compared to the data of the other years as in that year many farms remained empty because new chicken placements were forbidden in order to stop the dissemination of the disease.

Table 3:

Development of the number of egg farms and the average flock size in the Netherlands between 2000 and 2008

(Source: Centraal Bureau voor de Statistiek, own calculations)

<b>Year</b>	<b>Farms</b>	<b>Laying hens (&gt; 18 weeks)</b>	<b>Average flock size</b>
2000	2,292	32,573.0	19,213
2003	1,293	23,946.9	18,520
2005	1,726	30,512.8	23,782
2006	1,612	30,844.9	25,833
2007	1,550	31,426.8	26,597
2008	1,446	32,923.1	30,596
Change (%)	- 36.9	+ 1.1	+ 59.2

Table 4:

Contribution of the size classes to the number of egg farms (>1,000 places) and the total number of laying hens in the Netherlands (May 2008)

(Source: PVE 2009, p. 26)

<b>Size class (places)</b>	<b>Share (%) of all egg farms</b>	<b>Share (%) of total number of laying hens</b>
1,000 – 4,999	12	1
5,000 – 9,999	15	4
10,000 – 19,999	25	12
20,000 – 49,999	34	39
50,000 and more	14	43
Total	100	100

The sectoral concentration in the Dutch egg industry is rather high. In May 2008, farms with 50,000 and more places contributed only 14 % to the number of egg farms but held 43 % of all layers (table 4). Farms with up to 10,000 places shared only 5 % of the total laying hen population. They are continuously losing market shares.

In contrast to Germany and most other EU member countries, egg farmers in the Netherlands started comparatively early to transform farms with conventional cages to barn systems (*scharrel eieren*). The main steering factor behind this transformation process was the increasing demand for eggs from alternative forms of keeping laying hens in Germany. Whereas German egg farmers hesitated to follow this trend, Dutch egg farmers realised that this would become an attractive market. This will be discussed in more detail when analysing the foreign trade relations. Table 5 shows that in 2008 48.8 % of all egg farms favoured the barn system. They contributed 40.3 % to the total number of laying hens. The decision of the leading food retailers in Germany to no longer list eggs produced in cages or *Kleingruppen*<sup>2</sup> will open new markets to the Dutch egg industry because the enforced banning of conventional cages from 2009 on has already led to an egg shortage and increasing imports. Therefore it can be expected that the number of farms which produce eggs in alternative forms of keeping laying hens will further increase.

Table 5:

Farms with laying hens (> 1,000 places) and number of laying hens in the Netherlands (2008) by forms of keeping laying hens  
(Source: PVE 2009, p. 25, own calculations)

Form of keeping laying hens	Farms		Laying hens*		Average flock size
	Number	Share (%)	1,000	Share (%)	
Cage	311	27.7	14,138	45.2	45,460
Barn system	548	48.8	12,617	40.3	23,023
Free range	180	16.0	3,718	11.9	20,655
Biol. Production	85	7.6	797	2.5	9,376
Netherlands	1,124	**100.0	31,270	**100.0	27,820

\* Annual average

\*\* Sum does not add because of rounding

<sup>2</sup> The German *Kleingruppe* is a kind of enriched cage according to directive 1999/74/EU and German legislation with up to 60 hens per compartment.

The outbreak of Avian Influenza caused a dramatic decrease of the number of laying hens in the Netherlands. As can be seen from the data in table 6, the number of laying hens in 2003 was about 13.5 mill. or 30.7 % lower than in 2000. In the following years the hen population recovered by 13.7 mill. birds so that their number in 2008 was about 200,000 higher than in 2000.

Table 6:

Development of the laying hen population\* in the Dutch provinces between 2000 and 2008; data in 1,000 birds

(Source: Centraal Bureau voor de Statistiek, own calculations)

Province	2000 Layers	2003 Layers	2008		Change (%) 2008 to 2000
			Layers	Share (%)	
Groningen	672.1	679.8	1,084.4	2.5	- 61.3
Friesland	889.5	668.1	1,098.8	2.5	+ 23.5
Drenthe	1,619.7	1,254.6	1,499.0	3.4	- 7.5
Overijssel	2,943.0	2,680.5	3,380.6	7.6	+ 14.9
Flevoland	725.3	831.3	1,225.2	2.8	+ 68.9
Gelderland	12,360.9	4,696.2	12,859.3	29.1	+ 4.0
Utrecht	1,172.4	399.4	1,441.6	3.3	+ 23.0
Noord-Holland	163.4	334.8	285.3	0.6	+ 74.6
Zuid-Holland	407.7	349.3	103.5	0.2	- 74.6
Zeeland	1,160.8	1,029.2	974.7	2.2	- 16.0
Noord-Brabant	10,414.6	7,879.1	9,239.5	20.9	- 11.3
Limburg	11,510.0	9,695.8	11,049.3	25.0	- 4.0
Netherlands	44,036.4	**30,498.0	44,241.2	**100.0	+ 0.5

\* Includes pullets up to 18 weeks

\*\* Sum does not add because of rounding

When going down to the province level, one can easily see that the development was very inhomogeneous. Whereas the number of laying hens increased in seven provinces it decreased in five. The highest absolute increase showed Flevoland (+ 500,000), Gelderland (+ 500,000), Overijssel (+ 440,000) and Groningen (+ 400,000), the highest decrease Noord-Brabant (- 1.2 mill.), Limburg (- 461,000) and Zuid-Holland (- 300,000). The dynamics in centres of production (figure 1) differed considerably. Whereas the hen population increased in Gelderland, Noord-Brabant and Limburg had to face a remarkable reduction. Quite obviously, the regional concentration decreased as a consequence of the Avian Influenza outbreak. This can be seen from the increase of the laying hen population in Groningen, Friesland, Overijssel and Utrecht which are located at the periphery of the centre in the

southeast of the Netherlands. Nevertheless, the regional concentration is quite high. In 2008, the leading three provinces Gelderland, Limburg and Noord-Brabant contributed exactly 75 % to the total hen population. In 2000 their share had been as high as 77.9 %.

Table 7:

Average herd size in farms with laying hens in the Dutch provinces (2008); data in number of hens

(Source: Centraal Bureau voor de Statistiek, own calculations)

<b>Province</b>	<b>Average herd size</b>
Limburg	53,378
Flevoland	45,379
Noord-Brabant	38,022
Friesland	32,318
Zeeland	27,072
Groningen	25,819
Drenthe	24,984
Gelderland	27,072
Overijssel	20,868
Utrecht	16,198
Noord-Holland	7,316
Zuid-Holland	2,958
Netherlands	30,596

The average herd size in farms with laying hens differed considerably between the single provinces. With less than 3,000 hens farms in Zuid-Holland showed the smallest average size. In contrast, farms in Limburg had an average size of almost 53.400 hen places. It is worth mentioning that farms in Gelderland, the leading province in laying hen husbandry, were relatively small compared to Friesland and Flevoland. In these two provinces the number of laying hens increased considerably after 2003. Quite obviously farmers either enlarged their herds or built new large layer farms.

### **3. Development of egg production**

In 2000, 10 billion shell eggs for consumption were produced in the Netherlands, a volume which could not be reached again (figure 2). The production volume decreased dramatically to only 7 billion eggs in 2003

because of the outbreak of Avian Influenza. In the following years the production volume was always 800 to 900 mill. eggs lower than in 2000. Even though egg production increased to 9.4 respectively 9.5 billion eggs in 2007 and 2008, it was still about 500 mill. eggs lower than in 2000. One reason for the decrease is the fact that many egg farms with conventional cages were transformed to barn or free range systems in which the average laying rate is lower than in cage systems (table 8).

Table 8:  
Egg production in the Netherlands (2008) by forms of keeping laying hens  
(Source: PVE 2009, p. 25)

Form of keeping laying hens	Laying hens* (1,000)	Egg production (mill. pieces)	Average laying rate (eggs/hen/year)
Cage	14,138	4,436	314
Barn system	12,617	3,805	302
Free range	3,718	1,101	296
Biol. Production	797	178	223
Total	31,270	9,520	304

\* Annual average

In 2008, farms with cages contributed 46.6 % to total egg production, farms with barn and free range systems 40.0 % respectively 11.6 %, and farms with biological production 1.8 %. It can be expected that the number of farms with cages will continuously decrease because of the high demand for eggs from alternative production systems in Germany which cannot be met by domestic producers. Some of the cage farms may also be transformed to the German system *Kleingruppe* as eggs from this system can be sold in some regions of Germany and also in the United Kingdom. If and to what degree cage farms will be equipped with enriched cages according to directive 1999/74/EU cannot be answered at the present time.

#### 4. Patterns of foreign trade with eggs and egg products

The Netherlands have been the leading egg exporting country for years. Their contribution to global egg trade hovers between 24 % and 25 %. It is surprising that in spite of a self sufficiency rate higher than 300 %

considerable amounts of shell eggs are imported. Most of the imported eggs for the egg products industry. In the third step of this analysis the development of foreign trade with egg and egg products since 2000 and recent patterns of export and import flows will be analysed in more detail.

Figure 3 shows the development of shell egg exports and imports between 2000 and 2008. In 2000, 6.3 billion shell eggs for consumption were exported. In the following years the export volume decreased. The dramatic slump of the export volume in 2003 was caused by the Avian Influenza outbreak. The export volume decreased to less than 4 billion eggs or by 36.8 %. Even though exports reached 6 billion eggs in 2004, a continuous recovery cannot be observed before 2005. In 2008, the export volume was still 2.2 % lower than in 2000.

Table 9:

Development of the Dutch exports and imports of shell eggs for consumption between 2000 and 2008; data in mill. pieces  
(Source: PVE 2009, p. 32, personal information PVE)

<b>Year</b>	<b>Exports</b>	<b>Imports</b>	<b>Export surplus</b>
2000	6,325	913	5,412
2003	3,995	1,600	2,395
2005	5,700	1,598	4,102
2007	5,995	1,950	4,045
2008	6,091	2,256	3,835
Change (%)	- 2.2	+ 147.1	- 29.1

From table 9 one can see that imports increased already in 2003, but a continuous upward trend cannot be observed before 2004. Whereas in 2000 less than 1 billion eggs were imported, the import volume reached 2.3 billion eggs in 2008. The main reason for this increase is the high capacity of the export-oriented egg products industry. The result of the fast increasing imports was a decrease of the export surplus by 1.6 billion eggs or 29.1 %.

The growing imports of eggs for further processing are reflected in the development of the export volume of egg products. Between 2000 and 2008 exports nearly doubled. It is worth mentioning that the exports of liquid egg products grew much faster than those of egg powder (table 10). This is due to the fact that egg powder is traded worldwide, as dried products can be shipped over large distances because of their long



durability. In contrast, liquid egg products are mostly traded only over short distances because of their much shorter durability. Most of them remain within the EU. The year 2003 was an exception. As shell eggs could only be exported in a limited number because of import bans by many countries, large amounts of shell eggs were delivered to the egg products industry. The production volume of egg powder increased considerably as it could be stored for a long period and traded worldwide.

Table 10:

Development of the Dutch exports of egg products between 2000 and 2008; data in t (Source: PVE 2009, p. 33, personal information PVE)

<b>Year</b>	<b>Liquid egg products</b>	<b>Dried egg products</b>	<b>Total</b>
2000	52,852	8,315	61,167
2003	69,563	51,960	121,523
2005	76,595	8,929	85,524
2007	95,387	9,545	104,932
2008	108,474	11,613	120,087
Increase (%)	105,2	39,7	96,3

A detailed analysis of the export patterns shows the high regional concentration in the exports of shell eggs for consumption and egg products. The ten leading countries of destination shared 94 % of the total export volume (table 11). Germany was the dominating shell egg importing country for the Dutch egg producers with a share of 76 %. Seven of the leading countries of destination were located in Europe, two in the Near East, and one in Africa. Europe and here in particular EU member countries were the most important market for the Dutch egg exporters. Germany was also the leading importing country for egg products with a share of 43.2 % of the total export volume, followed by Belgium, the United Kingdom and Denmark. Japan was the only importing country located outside Europe. It only imported dried egg products. Similar to shell eggs for consumption, EU member countries were also the main trade partners. This was mainly due to the fact that more than 90 % of the export volume was liquid egg products.

Table 11:

The ten leading countries of destination for Dutch exports of shell eggs for consumption and egg products in 2008  
(Source: PVE, personal information)

Shell eggs for consumption			Egg products		
Country of destination	Exports (mill. pieces)	Share (%)	Country of destination	Exports (t)	Share (%)
Germany	4,627.8	76.0	Germany	50,197	43.2
Switzerland	261.7	4.3	Belgium/Lux.	16,570	14.3
Un. Kingdom	229.1	3.8	Un. Kingdom	13,109	11.3
Un. Arab. Em.	142.7	2.3	Denmark	12,291	10.6
Italy	118.5	1.9	France	4,842	4.2
Poland	88.4	1.5	Switzerland	4,720	4.1
Oman	71.8	1.2	Japan	3,343	2.9
France	69.5	1.1	Sweden	1,484	1.3
Angola	68.1	1.1	Austria	1,320	1.1
Denmark	45.1	0.7	Spain	1,298	1.1
10 countries	5,722.7	93.9	10 countries	109,174	*94.0
Total	6,091.4	100.0	Total	**116,163	100.0

\* Sum does not add because of rounding

\*\* Corrected value compared to the data in the 2009 Annual report of PVE (see table 10)

Table 12:

The ten leading countries of origin for Dutch imports of shell eggs for consumption and egg products in 2008  
(Source: PVE, personal information)

Shell eggs for consumption			Egg products		
Country of origin	Imports (mill. pieces)	Share (%)	Country of origin	Imports (t)	Share (%)
Belgium/Lux.	677.6	33.4	Germany	5,521	49.3
Germany	556.9	27.4	Poland	2,225	19.8
Spain	328.8	16.2	Denmark	1,034	9.2
Poland	252.9	12.4	France	927	8.3
France	77.3	3.8	Belgium/Lux.	895	8.0
Denmark	75.6	3.7	Un. Kingdom	198	1.8
Italy	24.3	1.2	India	105	0.9
Latvia	19.1	0.9	Italy	94	0.8
Lithuania	12.3	0.6	Argentina	70	0.6
Austria	2.3	0.1	Spain	50	0.4
10 countries	2,027.1	*99.8	10 countries	11,119	*99.2
Total	**2,031.4	100.0	Total	11,210	100.0

\* Sum does not add because of rounding

\*\* Corrected value compared to the data in the 2009 Annual report of PVE (see table 9)

In 2008, the Netherlands imported more than 2 billion shell eggs for consumption. Then ten leading countries of origin, all are members of the EU, contributed 99.8 % to the total import volume. Germany and Belgium

were the two leading suppliers with a share of together 60.8 %. Germany and Poland contributed 69.1 % to the egg products imports. Germany delivered mainly liquid egg products, in most cases special mixed components for the food industry. EU member countries were also the most important trade partners for egg products (table 12).

The main results of the preceding analysis can be summarized as follows:

- In spite of the dominating role of the Netherlands in shell eggs and egg products exports, egg production is only contributing 1.8 % to the value of agricultural production.
- The number of laying hens recovered from the dramatic decrease in 2003, caused by the outbreak of Avian Influenza, and reached a value in 2008 slightly higher than in 2000.
- The socioeconomic problems which resulted from the Avian Influenza outbreak accelerated the sectoral concentration process. In particular small farms quit egg production.
- The increasing demand for eggs from alternative production systems in Germany initiated a transformation of farms with conventional cages to the barn system (*scharrel eieren*).
- The regional concentration of egg production in the Netherlands is also quite high. Exactly 75 % of all laying hens were kept in the three leading provinces Gelderland, Limburg and Noord-Brabant. After the outbreak of Avian Influenza in 2003, the number of laying hens in provinces adjacent to the centre of production can be observed. On the other hand, the number of hens decreased in Noord-Brabant and Limburg.
- EU member countries dominate in the foreign trade of the Netherlands with eggs and egg products. Very close trade relations exist between Germany and the Netherlands. Germany is by far the most important country of destination for Dutch exports but is also an important country of origin for shell eggs and egg products imports.

## **Perspectives**

It can be expected that the Dutch egg industry will further stabilise in the coming years. One reason for this optimistic view is the fact that the demand for eggs from alternative production systems in Germany will further increase. Because of the enforced transformation of conventional cages as early as 2009, the import volume will increase by 2 billion eggs in 2009 compared to 2007. The German import data of shell eggs from the Netherlands until July 2009 indicate that about 5.6 billion eggs will be imported, 1.4 billion or 33.4 % more than in 2008. If this initiates an increase of the laying hen flocks in the Netherlands it is difficult to predict if one considers the density of livestock and poultry in the centres of production and the obvious problems with the oversupply of manure. In 2008, still 46.6 % of all laying hens were held in cages. They will have to be transformed according to directive 1999/74/EU by the beginning of 2012, either to enriched cages, *Kleingruppen*, or barn respectively free range systems. This will reduce the number of laying hens if no new farms can be built. As the problems resulting from the outbreaks of Classical Swine Fever and Avian Influenza are still present in the Dutch population, the construction of new egg farms will not be easy, at least not in the centres of production.

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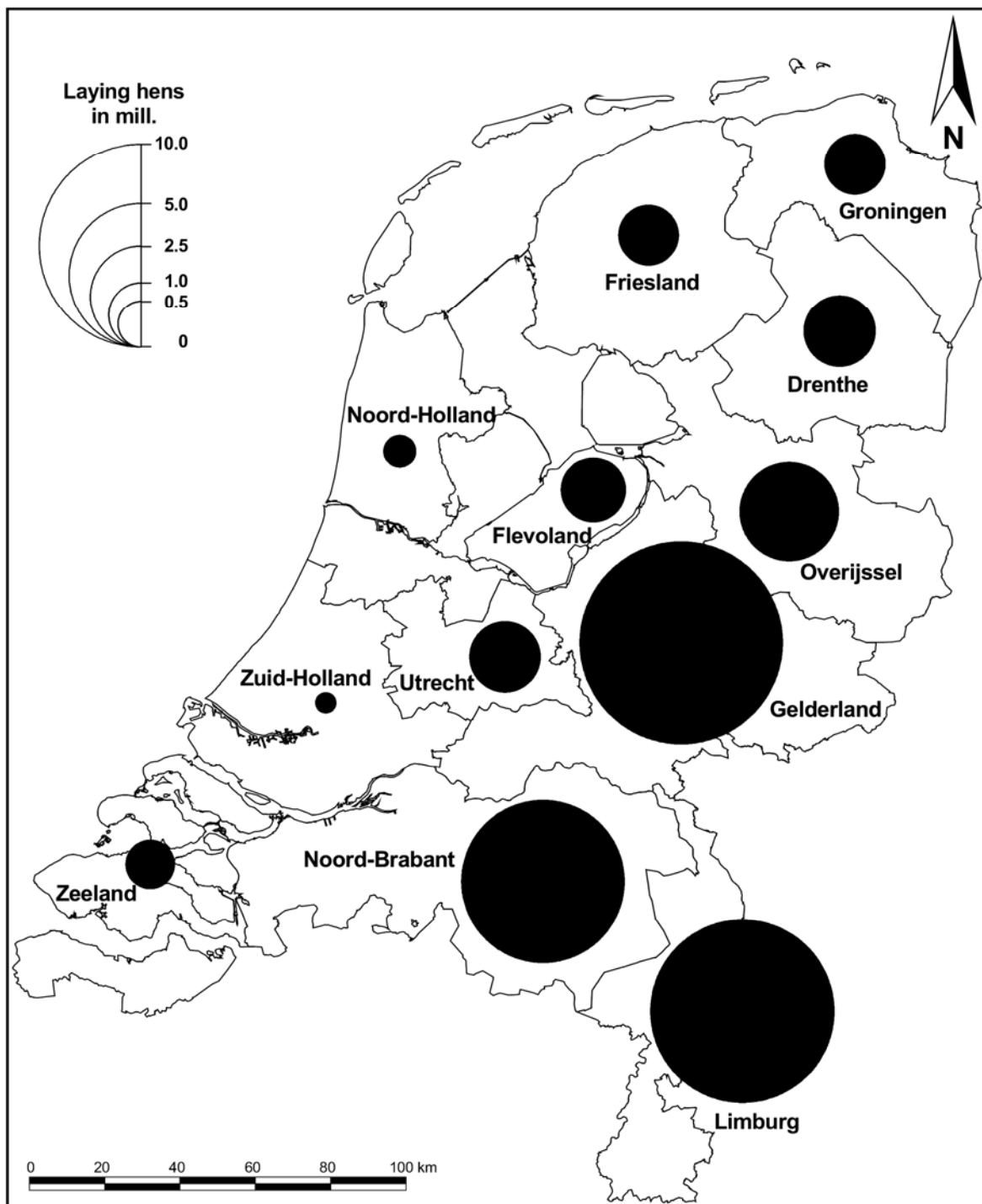
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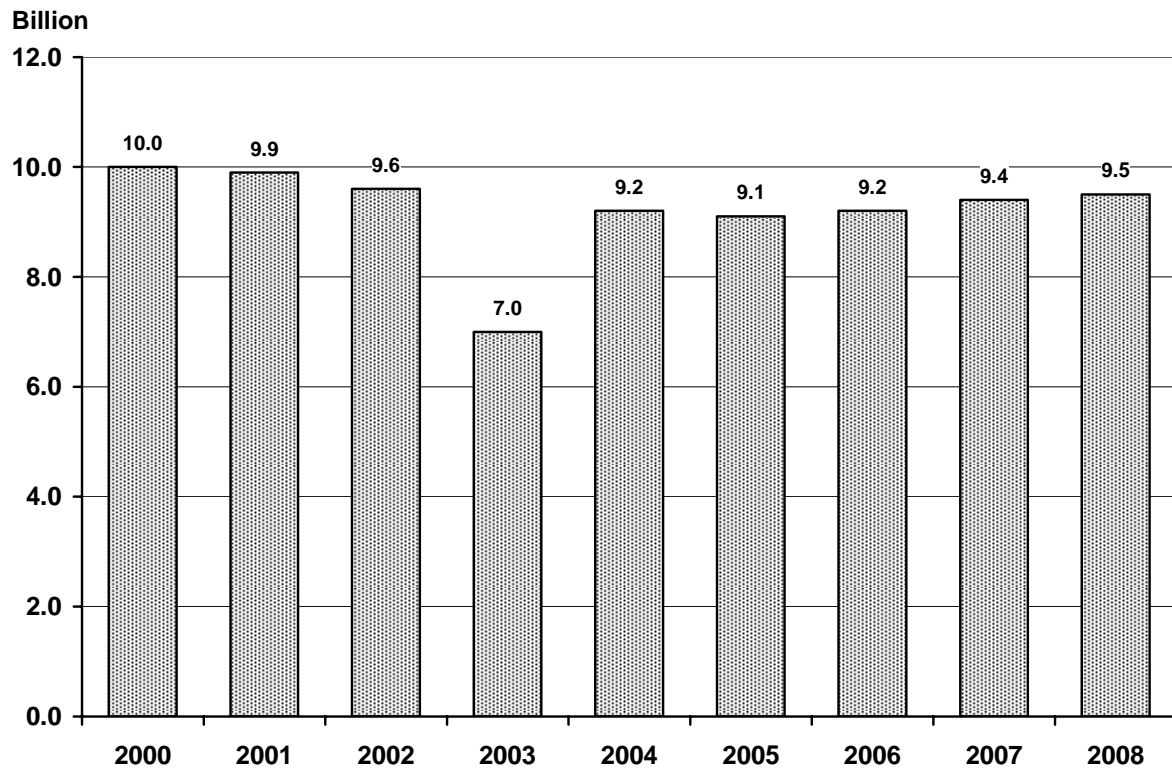
**Figure 1:**  
**Laying hens (> 18 weeks) in the provinces of the Netherlands**  
**(2008)**

(Source: Centraal Bureau voor de Statistiek)



**Figure 2:**  
**Development of the Dutch production of shell eggs for consumption**  
**between 2000 and 2008**

(Source: PVE 2009, p. 24)



**Figure 3:**  
**Dutch exports and imports of shell eggs for consumption (2000-2008)**

(Source: PVE 2009, p. 32)

