# PIG PRODUCTION IN THE NETHERLANDS: ANALYSES AND TRENDS

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## INTRODUCTION

The increase in pig production worldwide in recent decennia is mostly due to an increase in pig production in Asia (now having 60% of all pigs), and mostly so in China (see Table 1). In Europe (having 20% of all pigs), pig production is decreasing. However, pig production in the Netherlands is increasing slightly in recent years, amounting to about 12.1 million pigs in 2009, Table 1), which is similar to that of Canada. The Netherlands is a small country (only about 200 miles from North to South and 100 miles from East to West), bordered by the North Sea in the West and North, Germany at the East and Belgium in the South. Though small in size, it houses many people (about 16 million). Pig production is an important economic activity in the Netherland with about 23.7 million pigs produced per year, of which 77% is exported as piglets, slaughter pigs or meat (PVE, 2010). Total export value per year is about 2.5 billion Euro's.

## PIG NUMBERS IN THE NETHERLANDS: PAST AND PRESENT

In 1960 the number of pigs in the Netherlands amounted to 3 million pigs and from that year onwards there was a fast increase in pig numbers to 14.4 million in in 1996. Pigs were kept in areas of the Netherlands where relatively poor sandy soils are found. Feed was provided by imports via the harbour of Rotterdam and a fast developing feed industry, which made it possible to keep pigs regardless of availability and quality of land. This contributed a lot to the economic development of the population living in these areas.

In 1996, there were as many pigs as people in the Netherlands. By that time, pig production came under pressure because of environmental pollution (manure, smell) and also a large outbreak of Classical Swine fever. This led to national legislation to control the growth of the pig production sector. A system of 'pig

**Table 1** Pig numbers worldwide in the last 30 years (* million)

| countries | 1980 | 1990 | 2000 | 2003 | 2006 | 2009 | 2006-2009 |
|---|---|---|---|---|---|---|---|
| **World** | 798 | 856 | 899 | 899 | 927 | 941 | 101.5% |
| **Asia** | 382 | 437 | 529 | 526 | 548 | 560 | 102.2% |
| China | 326 | 361 | 439 | 425 | 440 | 452 | 102.7% |
| **Europe** | 249 | 262 | 200 | 198 | 193 | 188 | 97.4% |
| Germany | 34.5 | 34.2 | 25.7 | 26.3 | 26.5 | 26.9 | 101.5% |
| Spain | 10.7 | 16.9 | 22.4 | 24.1 | 26.2 | 26.3 | 100.4% |
| Poland | 21.3 | 19.5 | 17.1 | 18.6 | 18.9 | 14.3 | 75.7% |
| France | 11.4 | 12.3 | 14.9 | 15.1 | 14.8 | 14.8 | 100.0% |
| Denmark | 9.9 | 9.3 | 11.9 | 12.9 | 13.4 | 12.4 | 92.5% |
| **Netherlands** | **10.1** | **13.9** | **13.1** | **11.2** | **11.4** | **12.1** | **106.1%** |
| United Kingdom | 7.8 | 7.5 | 6.5 | 5.0 | 4.9 | 4.6 | 93.9% |
| **Northern America** | 77.4 | 64.2 | 72.2 | 74.3 | 76.6 | 79.6 | 103.9% |
| USA | 67.3 | 53.8 | 59.3 | 59.5 | 61.5 | 67.1 | 109.1% |
| Canada | 10.1 | 10.4 | 12.9 | 14.7 | 15.1 | 12.4 | 82.1% |
| **Central America** | 19.4 | 18.2 | 19.3 | 19.2 | 20.0 | 20.9 | 104.5% |
| **South America** | 52.0 | 51.3 | 47.9 | 49.3 | 54.3 | 56.1 | 103.3% |
| Brazil | 34.2 | 33.6 | 31.6 | 33.3 | 35.2 | 37.0 | 105.1% |
| **Africa** | 10.2 | 16.5 | 21.2 | 22.6 | 25.5 | 27.6 | 108.2% |
| **Australia and New Zealand** | 3.0 | 3.0 | 2.9 | 3.0 | 3.1 | 2.6 | 83.9% |

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rights' was introduced by which the total number of pigs in the Netherlands was more or less fixed at about 12 million.

'Pig rights' could be transferred from farm to farm allowing farm expansion but further growth of number of pigs in the Netherlands was put on hold.

Related with economic pressure, farm size is increasing, at the expense of the number of farms. In 1995, there were 9,623 sow farms having on average 156 sows. In 2009, the number of sow farms had decreased to 3,073 and the average number of sows per farm had increased to 366. About 621 of these farms had more than 500 sows. The number of farms with grower-finishing pigs decreased from 19,627 in 1995 to 6,508 in 2009 and the number of grower-finishing pigs per farm increased from 363 to 902. About 700 farms with grower-finishing pigs had more than 2000 pigs. The majority of farms in the Netherlands is specialised in the sense that they either produce piglets (up to ~25 kg) or have grower-finishing pigs. About 30% of the pigs are produced by integrated farrow-to-finish farms that both produce piglets and bring them to slaughter weight and the average size of these farms is 307 sow places combined with 1800 grower-finishing pig places.

Since 2007 sow farms can only deliver their piglets to a limited number of grower-finisher farms. Such a limit to the number of contact farms should minimize the risk of disease transmission.

## NETHERLANDS AS PIG EXPORTING COUNTRY

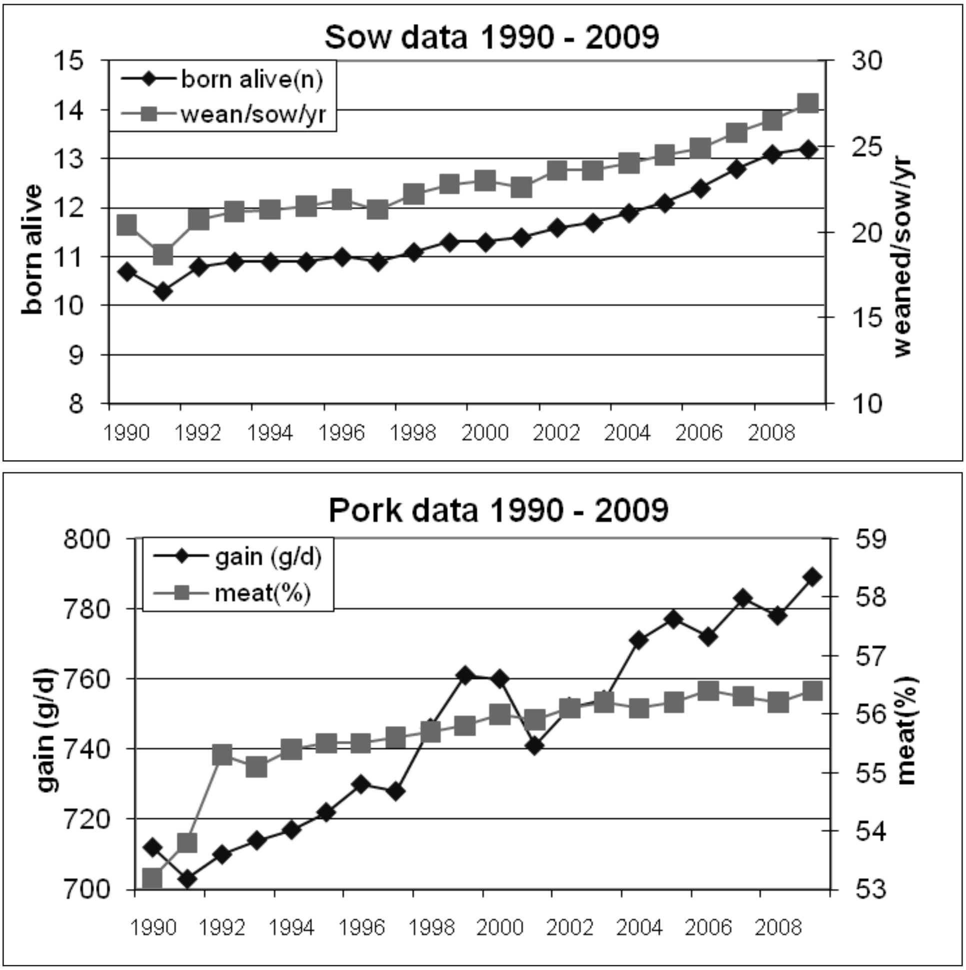
In 2009, the pig production sector produced about 23.7 million piglets. Of these produced piglets, only 17.6 million are kept to market weight in the Netherland and of these market weight pigs, only 12.8 million are slaughtered in the Netherlands and 4.8 million are exported (PVE, 2010). Exported slaughter pigs mostly go to Germany (76%), Hungary (10%) and Poland (7%). The remainder of the produced piglets (6.1 million) is exported as 25 kg pigs, mainly to Germany (50%), Poland (14%) and Belgium (12%). Of the meat produced by Dutch slaughter houses; also about 66% is exported, mainly within Europe (88%; 21% to Germany, 19% to Italy and 12% to Greece). Thus, in total, about 80% of the total number of pigs produced is exported as piglets, slaughter pigs or meat, which makes the Netherlands one of the largest pig exporting countries in Europe and in the world. This number of exported pigs from The Netherlands is still increasing. In terms of export volume the Dutch pig sector is the 4$^{th}$ in the world (after Germany, United States and Denmark, Canada holds the 6$^{th}$ place). From 1990 onwards, export of piglets and slaughter pigs has more or less doubled, and it is anticipated that this number will increase further in the coming years, related with the increased pig production per sow. This puts the sector at risk, e.g. when borders are closed due to an outbreak of specific ‘list A’ diseases (EU-list of epizootic diseases) in the Netherlands or the countries to which we export. To ensure quality of the exported piglets and aid a good start at the grower-finish farm, in 2008 a so called ‘piglet pass’ was developed. This pass contains information about the farm the animals come from and information about the piglets’ diet, time of last feeding, health measures taken by the farm, medicines supplied to the piglets and barn temperatures before delivery. In 2005, EU legislation was developed to provide minimum standards for live animal transport to guarantee welfare and safety during transport. The Dutch pig industry has taken that one step further by developing new regulations for transport of pigs. In 2011, the new system will be implemented. Only certified drivers, trucks and transport companies are allowed to transport animals and surveillance of transports takes place, e.g. by Trucks GPS systems and temperature registration in the truck.

## TECHNICAL RESULTS

The technical results in sow productivity show an impressive increase the last 20 years. The number of weaned piglets per sow per year has increased with about 35% to 27.5 in 2009 (see Figure 1A). This can be explained by the improvements made by genetic selection, but also by good management and good quality labour that allows the pig farmers to keep up with those genetic improvements. Nowadays, the focus of management on the sow farms is less directed to increasing litter size but more towards keeping piglets alive after farrowing.
Performance figures in grower-finishing pigs show a less pronounced increase. Since 1990, daily gain of piglets from 25 kg to market weight has increased with 9.7 and feed efficiency with 3.2 % (see Figure 1B). This limited progress is partly

explained by the increased slaughter weight. Since 1990, live weights at slaughter have increased by 10 kg to 118 kg. But still, performance figures in the grower-to-finish pigs are not close to their genetic potential which may imply that health of pigs is an important factor limiting growth development in grower-finishing pigs.

**Figure 1** Pig performance data in the Netherlands in the last 20 years, for (A) Sows and (B) slaughter pigs [Kengetallenspiegel Agrovision]




## MEAT CONSUMPTION

Of the total meat consumption in The Netherlands of 86.6 kg, pork consumption was 41.8 kg (carcass based) per head of the population in 2009, which is reasonably stable the last 5 years and close to the average of the 27 EU countries (41.8kg). Of all EU countries, pork consumption is highest in Spain, Austria and Germany (55-58kg), and lowest in the UK and France (25 and 34kg, respectively).

## ECONOMY

For a country that is so dependent on export, the realisation of a low cost prize is important. A cost prize comparison based on figures of 2007 (Hoste and Puister, 2009) showed that cost prizes in the Netherlands are among the lowest in Europe, together with those of Denmark. The cost prize in 2007 in the Netherlands was €1.45 per kg slaughter weight. Compared to other European countries, feed costs and labour costs are relatively low but housing costs, and costs to comply with governmental legislation in the field of environment (manure disposal and ammonia emission), animal welfare, animal health, food safety and spatial planning are relatively high and expected to rise more in the Netherlands as compared to other European countries. In 2007, the additional costs of policy measures were €0,20 per kg slaughter weight and are expected to rise to a level of €0,28 in 2013. To keep up with the European competition, technical results have to be optimal and production quality has to be outstanding. With regard to product quality, pig producers can be voluntary certified to a branding called IKB (which stands for Integral chain control). This branding gives guaranties on product quality, product origin and organisation in the pig producing chain. Farms with the IKB trademark are regularly checked on e.g. quality of feed, animal welfare, use of medicines, hygiene and transport. At this moment about 95% of the Dutch farmers are carrying this trademark. By special product branding it may be feasible to realise a better prize for piglets and/or products.

In general, the profit of sow farms has improved the last years, but not so the profit at the grower-finishing farms. The latter is due to stagnating technical results, but also investments related with manure legislation. Since ‘pig rights’ for sows and slaughter pigs can be exchanged, the trend has been that the number of sow places in the Netherlands increases at the expense of grower-finishing places, which also explains the growth in export of piglets.

## SOCIETAL ISSUES

In the last decades, farming changed from a more pastoral scene to a largely specialised and industrial way of animal keeping. Also the percentage of the human population allied to agriculture has strongly reduced. At the same time the view of society on animals has changed. Where –in earlier days- cats were kept to catch mice, dogs were kept for guarding the house and horses for labour, these animals are now seen as companions or even friends. Nowadays, all kinds of organisations ask attention for animal rights, not only for our companion animals, but also for animals in production systems. Dutch parliament (consisting of in total 150 members of 10 different political parties) even has a political party completely dedicated to Animal Rights, the ‘Dierenpartij (2 members of parliament).

Several issues raise public concern regarding animal production, e.g.

- Animal rights/welfare (with focus on housing conditions and concerns about long distance transport of live animals)
- Threats to human health
  - pathogens; SARS (from chicken) and recently in the Netherlands Q-fever (from goats)
  - food safety, e.g. Salmonella
  - resistance to antibiotics
- Pollution of the environment
  - quality of air, soil and water
  - loss of scenery when so-called 'mega-farms' are built

These public concerns about animal welfare, human health and environmental issues have reduced confidence in the pig production sector. To keep a licence to operate, the pig production sector has to show that they take these concerns seriously and work on solutions. Partly, this is forced by legislation but the pig production sector also takes responsibility itself and actively takes up these challenges. Examples are listed below.

*Group housing of pregnant sows* Due to European legislation all pregnant sows have to be group housed from January 2013 onwards. According to European legislation, group housing will be obligatory from 4 weeks of gestation onwards. However, some European countries have their own –more strict- rules. For example, in the Netherlands, sows need to be group housed within 3 days from insemination and for the United Kingdom, sows have to be group housed from weaning onwards and can only be crated during insemination.

*Castration of male piglets*. In an agreement between national government and industry, it was agreed that from 2015 onwards, castration of male piglets should stop. For now, castrations are still allowed, but need to be performed under anaesthesia.

*Antibiotics*. Another agreement between Dutch pig producers and its government declares that the use of antibiotics must be halved between 2000 and 2013. When goals are not reached, additional legislation can be anticipated. Antibiotic use is now registered in a national data bank to monitor the level of use.

*Salmonella prevention.* In order to reduce salmonella contamination in pig meat an active national salmonella monitoring program has been developed. By sampling at slaughter houses or at farms by veterinarians the salmonella status of pigs from farms is monitored. Farms can take preventive measures based on this information e.g. acidification of drinking water or strict hygiene protocols.
With regard to PEARS a similar monitoring program is under development.

*Pollution of the environment:* The sector has been very active to decrease pollution from manure (Phosphorus and Nitrogen). Improved feeds (with more balanced amino acid profiles and phytase) has already greatly reduced the output of P and N. Actions are also taken to ferment manure to produce gas for energy. Also legislation has been developed with maximizes the amount of N and P that can be used on soils and farmers have to keep account of their pig manure production and their contracts to sell manure (e.g. to crop farmers). From January 2013, EU legislation demands maximum values for ammonia emission from farms. This has led to a whole range of ammonia reducing measures that can be taken on farms (e.g. air scrubbers). Since European legislation still becomes tighter manure control will remain an important issue in the years to come.

*Piglet mortality.* At the end of 2009, piglet mortality became a political issue. Questions were asked in the parliament and the industry (e.g. breeding organisations, farmers organisations, product boards) combined forces (Stuurgroep Bigvitaliteit) to reduce piglet mortality to weaning by 15-20% (from 12.8%) on conventional sow farms and by 30-40% (from 20%) on organic sow farms. The plan of action consists of increasing awareness of pig farmers, more knowledge transfer on risk factors and monitoring piglet mortality more closely through the sow management systems.

## FUTURE

The number of farms will continue to decrease and the numbers of pigs per farms will continue to increase in the coming years. Several measures will be taken to improve bio-security and labour efficiency (e.g. farrow-to-finish farms, 3- to 4-week production systems).
There will be many challenges for the pig production sector in the future. Pig production in the Netherlands is still successful because it listens to the concerns of the public and deals with these concerns by showing its efforts towards sustainable production systems, with attention to animal welfare, human health concerns and environmental issues. At the same time they are keeping cost prizes relatively competitive. Dutch pig producers have always shown to be creative, innovative craftsmen which makes us hopeful for the future.

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