

Danish pig production in a European context

A benchmarking exercise: Denmark, UK,
Holland and Germany

Danish pig production in a European context

In recent years, there has been growing interest in how food is produced, both among industry stakeholders and consumers. The aim of this report is to provide a better appreciation of pig production in Denmark in relation to a number of other EU countries. The review covers animal welfare standards, animal health, the environment and food safety, which are all central to the debate on sustainable production.

The report compares pig production in Denmark, UK, Holland and Germany, all of whom are significant pig producing countries and are key players in the European market. The report is based on data gathered from relevant organisations in the selected countries and processed by the Danish Agriculture and Food Council. In areas where information was unavailable, it was assumed that production standards were at the level required by EU legislation. The following is a brief resume of the main conclusions.

Quality and control

- Denmark, UK, Holland and Germany have introduced individual quality systems for pig production. All are covered by independent third party control.
- The Danish and UK systems cover indigenously produced animals only, as the entire production chain from breeding to slaughter takes place in the same country.

Animal health and use of veterinary medicine

- Requirements concerning the frequency of veterinary visits differ significantly between countries.
- In Denmark, veterinarians may only prescribe antibiotics, but not sell them to producers.
- Denmark, UK and Holland maintain a central register of veterinary medicine usage. Denmark differs from other countries by having detailed records for animal groups, herd owners and veterinary prescriptions.

- A new Danish initiative enables the authorities to issue a 'yellow card' to herds or veterinarians with a disproportionately high consumption of antibiotics.
- The available evidence suggests that Denmark has the lowest consumption of antibiotics per kg meat produced among the countries compared in this report.

Feed

- Use of GM feed is allowed in all countries.
- Animal fat and blood products are not permitted in the UK or in the production of pigs under the Contract for UK Production in Denmark.

Housing and welfare

- From 2013, all pregnant sows in the EU must be housed in loose systems from four weeks after service up to seven days before expected farrowing.

- Both the UK and Holland have more wide-ranging requirements than EU legislation regarding the length of time that sows must be in loose systems. For production of pigs under the Contract for UK Production in Denmark, UK legislation is followed and no confinement is allowed from service to seven days before expected farrowing.
- In the UK, all pregnant sows are already housed in loose systems and around 40% of the breeding herd is kept outdoors.
- In Denmark, it is estimated that 68% of pregnant sows are kept in groups, and the figures for Holland and Germany are 60% and 30% respectively.
- Traditional farrowing pens are allowed in all countries. Denmark will work to have at least 10% of sows in free farrowing systems by 2020.
- In Denmark, Holland and Germany, pain relief must be administered before the castration of piglets takes place. Castration is not permitted under the UK quality system.
- Use of fully slatted flooring systems is not permitted in Holland and will be phased out in Denmark by 2015.

Environment

- Denmark has stricter requirements regarding the application of nitrate on the land compared to other EU countries.
- The UK has been allowed a derogation from the EU regulations for certain farm types.
- Denmark, UK, Holland and Germany have requirements for the utilisation of nitrogen in slurry.

Transport

- The UK, Holland and Germany have implemented individual transport standards which are subject to independent third party control.
- Denmark is alone in requiring mechanical ventilation in all new vehicles.
- The available evidence suggests that Denmark has the lowest level of mortality of pigs during transport from farm to abattoir.

Abattoir

- Group stunning is gaining ground across all countries, and is now by far the most common system used in Denmark (95% of all pigs slaughtered).
- The training of abattoir personnel in the responsible handling of animals is well established in Denmark.

Food safety

- Denmark is the only country to have implemented a Salmonella surveillance and control programme covering the entire pig meat production chain.
- Occurrence of Salmonella in fresh pig meat is very low in Denmark, in relation to most other EU countries.

Quality and control

In recent years, there has been an increased uptake of independently certified quality schemes in many EU countries. These independent controls aim at ensuring compliance with national

and EU legislation and, in certain cases, with specific market requirements. All the countries reviewed in this report operate quality standards for pig production, which are subject to

independent third party controls. In Denmark and the UK, the quality schemes are linked to use of indigenously produced animals.

	Denmark/Danish	Denmark/UK Contract production	UK	Holland	Germany
Quality system	DANISH Product standard (QSG) (QSG since 1995, DANISH certification since 2007)	UK Contract (since 1998)	Assured British Pigs/The Red Tractor Farm Assurance Pigs Scheme (since 1999)	IKB Varken (since 1995)	QS (since 2001)
Coverage	Approx. 80% of production	Approx. 15% of production	Approx. 90% of production	Approx. 90% of production	Approx. 95% of production
Identification and traceability	CHR number (herd number) Ear tags Supplier number Approved Danish pigs only	CHR number (herd number) Ear tags Supplier number Approved Danish pigs only	SE number Ear tags Supplier number Approved UK pigs only	UBN-number Ear tags Holland primarily slaughters Dutch pigs.	QS-ID Ear tags Supplier number Germany primarily slaughters QS-pigs (incl. German, Danish and Dutch).
Audit	Independent third party control every year or every 3rd year dependent on the audit result. Risk-based inspections by the authorities (unannounced).	Independent third party control every year. In addition, 10% unannounced control visits per year. Risk based inspections by the authorities (unannounced).	Independent third party control every year.	Independent third party control every year.	Independent third party control every year, every 2nd year or every 3rd year dependent on audit result.

Animal health and use of veterinary medicine

Requirements regarding the frequency of veterinary visits varies considerably between the countries. All countries require that prescriptions must be based on a diagnosis made by a vet.

In Denmark, more than 90% of all pig producers have signed a Health Advisory Contract with a veterinarian. The required number of veterinary visits is risk-based and depends on medicine consumption and herd mortality. This provides an incentive for pig producers to adhere to best practice. Other herds are visited at least once a year.

In all countries, pig producers must register their herds' medicine or antibiotic usage. In Denmark, vets may only prescribe but not sell medicine to pig producers. As a result, all medicine and antibiotics must be purchased through a pharmacist. This ensures that health advice and the sale of antibiotics are kept separate so there is no financial incentive for vets to "over-prescribe" antibiotics. In practice, this initiative has resulted in lower consumption of medicine or antibiotics in Danish herds.

Denmark, UK and Holland all maintain a central register for usage of veterinary medicine. However, Denmark differs in that it registers animal groups, herd owners and veterinary levels, which allows for statistics per vet and per herd. A new Danish initiative based on registrations in VETSTAT (Veterinary Medicine Statistics) enables the Danish authorities to issue "yellow cards" to herds or vets that either use or prescribe too much medicine.

	Denmark/Danish	Denmark/UK Contract production	UK	Holland	Germany
Health advice	<p>Health advisory contracts are mandatory for herds of a certain size. Some 90% of pig producers have entered into health advisory contracts with a vet. These contracts involve between 9 and 12 annual advisory visits for sow herds and 4 and 6 annual advisory visits to finisher herds. The number of visits depends on medicine usage and mortality recorded in the herd.</p> <p>Herds without a health advisory contract must have at least one annual visit by a vet.</p> <p>All herds that exceed the threshold values for antibiotic use receive a "yellow card" from the authorities. This, in turn, will result in tighter supervision and a demand for specific action to be undertaken.</p>		Three monthly veterinary visits required.	Two annual veterinary visits or one visit per finishing period required.	Monthly veterinary visit required.
Health status	<p>All herds must have a declaration of their health status and Salmonella Level. The herds' health status is recorded in a database, which is in the public domain at www.spf-sus.dk.</p> <p>Denmark has Trichina-free status.</p>		No central health supervision.	No central health supervision.	No central health supervision.

Animal health and use of veterinary medicine **continued**

	Denmark/Danish	Denmark/UK Contract production	UK	Holland	Germany
Prescription of medicine or antibiotics	Vets are not allowed to sell medicine. Medicine must be bought through a pharmacist. Prescriptions require a veterinary diagnosis.		Vets can sell medicine. Prescriptions require a veterinary diagnosis.	Vets can sell medicine. Antibiotics may only be prescribed for seven days. Prescriptions require a veterinary diagnosis.	Vets can sell medicine. Prescriptions require a veterinary diagnosis.
Registration of medicine usage	Pig producers must register the herd's medicine usage.		Pig producers must register the herd's medicine usage.	Pig producers must register the herd's medicine usage.	Pig producers must register the herd's medicine usage.
Monitoring medicine usage	Medicine consumption is registered at VETSTAT at animal group, herd owner and veterinary level. The results are published each year in the DANMAP report.		Central monitoring although not at animal group, herd owner or veterinary level.	No central monitoring.	Central monitoring although not at animal group, herd owner or veterinary level.
Total usage of antibiotics – all meat types (2007)	0.06 g antibiotics/kg meat (0.05 g/kg pork in 2009)	0.06 g antibiotics/kg meat (0.05 g/kg pork in 2009)	0,11 g/kg meat	0,10 g/kg meat	0,25 g/kg meat

Feed

The regulations concerning animal feed are relatively uniform across the EU. Since 2000, the EU has maintained a ban on the use of meat and bonemeal (MBM) in pig feed. Feed containing animal protein is not permitted.

Since 2006 the use of antibiotic growth promoters has been phased out in the EU (Denmark and Germany had already banned anti-biotic growth promoters). All countries allow the use of GMO feed.

Use of blood products and animal fat are not allowed in the UK or in the Contract for UK Production. In Denmark, fish meal cannot be used for finishers above 40kg.

The UK, Holland and Germany have implemented individual feed standards that are subject to independent third party controls. Denmark operates comprehensive authority controls equivalent to the rules for independent third party control.

	Denmark/Danish	Denmark/UK Contract production	UK	Holland	Germany
Production	Public control. Feed must be purchased from Danish authorised or QS approved feed companies. Official controls comprise one annual audit and 4-6 annual inspections.	Public control. Feed must be purchased from Danish authorised feed companies. Official controls comprise one annual audit and 4-6 annual inspections.	Feed can only be purchased from UFAS (Universal Feed Assurance Schemes) approved feed companies.	Feed can only be purchased from GMP+ approved feed companies.	Feed can only be purchased from QS approved feed companies.
Meat and bonemeal	Not permitted	Not permitted	Not permitted	Not permitted	Not permitted
Blood products	Permitted	Not permitted	Not permitted	Permitted	Permitted
Animal fat	Permitted Fat accounts for 1-3% of the feed mix and both vegetable and animal fats are used.	Not permitted Fat accounts for 1-3% of the feed mix and both vegetable and animal fats are used.	Only fish oil permitted.	Permitted	Permitted
Antibiotic growth promoters	Not permitted since 2000.	Not permitted since 2000.	Not permitted since 2006.	Not permitted since 2006.	Not permitted since 2004.
Catering by-products, food waste etc	Food waste is permitted as long as it does not contain protein from livestock.		Food waste is permitted as long as it does not contain protein from livestock.	Food waste is permitted as long as it does not contain protein from livestock.	Food waste is permitted as long as it does not contain protein from livestock.
Protein sources/feed composition	Fish meal may not be used for finishers above 40kg.		No restrictions on use of fish meal.	No restrictions on use of fish meal.	No restrictions on use of fish meal.
GMO	Use of GMO feed is permitted.		Use of GMO feed is permitted.	Use of GMO feed is permitted.	Use of GMO feed is permitted.

Housing and welfare

From 2013, under EU legislation, all pregnant sows must be loose from four weeks after service to one week before expected farrowing.

For many years, the UK has operated more extensive legislation as regards the loose housing of pregnant sows and all sow herds had converted to loose systems by 1999. In addition, sows must be kept in groups for the whole period from weaning until seven days before the predicted date of farrowing. The same rules apply

to the production of pigs in the Danish UK Contract. Dutch legislation will require that sows must be in loose systems from four days after service from 2013.

In Denmark, 68% of pregnant sows are currently kept in loose systems and it is expected that all production will comply with the new EU legislation by January 2013. It is estimated that proportion of sows currently kept in groups is 60% in Holland and 30% in Germany.

The Danish pig industry's objective is that 10% of sows must be kept in free farrowing pens by 2020. From then it is expected that all newly built farrowing pens will allow the sow to move freely.

All countries are subject to EU legislation, requiring that pigs have permanent access to manipulable materials, but there are differences as regards what materials meet the requirements in individual countries.

	Denmark/Danish	Denmark/UK Contract production	UK	Holland	Germany
Pregnant sows	From 2013, sows and gilts must be housed in loose systems no later than four weeks after service and seven days before expected farrowing.	Sows and gilts must be housed in loose systems from weaning until seven days before expected farrowing.	Sows and gilts must be housed in loose systems from weaning until seven days before expected farrowing.	From 2013, sows and gilts must be housed in loose systems from four days after service to seven days before expected farrowing.	From 2013, sows and gilts must be housed in loose systems from four weeks after service and until seven days before expected farrowing.
	The pen must not be narrower than 3m at any point.	The pen must not be narrower than 3m at any point.	At least 2.8m between the sides of the pen.	At least 2.8m between the sides of the pen.	At least 2.8m between the sides of the pen.
	There must be straw on the solid/drained floor.	There must be straw on the solid/drained floor.	Around 40% of the UK breeding herd is kept outdoors.		

All countries have requirements regarding hospital pens and Denmark, Holland and Germany have additional requirements as regards their layout. In Denmark, there are also requirements regarding numbers of pens available.

Denmark has an additional requirement that sprinkling or misting systems must be available in pens with pigs above 20kg in weight.

Denmark, Germany and Holland require pain relief for castration. Under the UK's Farm Assurance Pigs Scheme standard, castration is not permitted.

In the UK, tail docking must be carried out within the first three days after birth while the time limit in Denmark and Germany is four days. In addition, under Danish legislation, only half the tail can be docked.

Fully slatted floors are not permitted in Holland. In Denmark, fully slatted floors in newly built units have been banned since 2000. From 2015, fully slatted floors will be prohibited for all piglet and finisher units.

	Denmark/Danish	Denmark/UK Contract production	UK	Holland	Germany
Farrowing pens	Under EU legislation, use of farrowing pens is permitted.		Under EU legislation, use of farrowing pens is permitted.	Under EU legislation, use of farrowing pens is permitted.	Under EU legislation, the use of farrowing pen is permitted.
	Appropriate nest building material in sufficient quantities is required unless this is technically impossible because of the slurry system used at the farm.		Appropriate nest building material in sufficient quantities is required unless this is technically impossible because of the slurry system used at the farm.	Appropriate nest building material in sufficient quantities is required unless this is technically impossible because of the slurry system used at the farm.	Appropriate nest building material in sufficient quantities is required unless this is technically impossible because of the slurry system used at the farm.
	The piglets must have a lying area that is separate from the sow. If necessary, there must also be a source of heat.		The piglets must have a lying area that is separate from the sow. If necessary, there must also be a source of heat.		
	The Danish pig industry's objective is that 10% of sows must be kept in free farrowing pens by 2020. From then it is expected that all newly built farrowing pens must allow the sow to move freely.				
Weaning of piglets	After 28-35 days. The average for 2009 was 30.8 days.	After 28 days	After 28 days	After 28 days	After 28 days

Housing and welfare **continued**

	Denmark/Danish	Denmark/UK Contract production	UK	Holland	Germany
Enrichment and rooting materials	All pigs must have permanent access to sufficient quantities of straw or other manipulable rooting and enrichment material. Enrichment and rooting material must be of natural materials and in contact with the floor. Chains alone are not acceptable.		All pigs must have permanent access to sufficient quantities of enrichment and other rooting materials. Chains alone are not acceptable.	All pigs must have permanent access to manipulable materials. Chains with plastic hooks are permitted.	All pigs must have permanent access to manipulable materials. The material must be harmless and adequate. Chains with plastic hooks are permitted.
Proportion of solid floor for piglets and slaughter pigs	Since 2000, it has been forbidden to build stalls with fully slatted floors. With regard to newly built stalls, at least half of the floor for piglets and at least one-third of the floor for finishers must be solid or drained. This will apply to all systems from 2015.		Fully slatted floors are permitted.	40% solid floor for piglets and finishers required.	Fully slatted floors are permitted.
Sprinkling systems	All pigs over 20kg (including sows) must have access to a sprinkling system or another system that can keep the pigs cool.		No regulation	No regulation	No regulation
Hospital pens	There must be an adequate number of hospital pens so that there is always at least one pen readily available for sick animals. The number of hospital pens must correspond to at least 2.5% of the total number of indoor pen places for loose pregnant sows.		Sick pens required. Isolation of animals with infectious diseases required.	Sick pens must be well ventilated and warm and dry.	Sick or injured animals must be isolated in a pen with dry and comfortable straw bedding.
Castration	Pain relief must be administered before castration takes place. Anaesthetic must be used if castration is carried out 7 days after farrowing.		According to the scheme castration is not permitted. According to UK legislation, castration is permitted up to the seventh day after farrowing. Castration after that time must be carried out by a vet under anaesthetic.	Pain relief must be administered before castration takes place. Anaesthetic must be used if castration is carried out 7 days after farrowing.	Pain relief must be administered before castration takes place. Anaesthetic must be used if castration is carried out 7 days after farrowing.
Tail docking	Permitted between 2 and 4 days after birth and no more than half the tail may be docked.		Only within the first 3 days.	Docking of part of the tail no later than seven days after birth.	Docking of part of the tail no later than four days after birth.
Tooth reduction	Tooth clipping is not permitted. Tooth grinding is allowed but not on a routine basis. Tooth grinding must take place within the first four days of birth.		Tooth clipping is allowed within the first seven days of birth.	Tooth clipping is allowed within the first seven days of birth.	Tooth clipping is allowed within the first seven days of birth.

Environment

Denmark operates tougher requirements regarding nitrate application compared to EU legislation (170kg N/hectare). The UK has been given permission to input 250kg nitrate per hectare for grassland farms.

EU legislation sets no specific requirements regarding the storage of slurry, and requirements between the countries vary significantly. To prevent the evaporation of gases to the surrounding environment, Danish slurry tanks must be covered.

For many years, regulations have been in force in Denmark concerning the utilisation of nitrogen (N) in slurry. The minimum requirement for utilisation of nitrogen in pig slurry is 75%. In Holland and Germany similar regulations apply, and the utilisation requirement is 60-65%. Since 2009, regulations have also been in force in the UK with regard to the utilisation of nitrogen. The minimum requirement is currently 25%, with 35% from 2012.

Every year, Danish farmers are obliged to draw up a crop cultivation plan and a plan for the handling of fertiliser. They are also required to draw up a special environmental report with all relevant information for the authorities to ensure detailed compliance.

In relation to the climate and the emission of greenhouse gases, feed consumption plays an important role. According to life cycle analysis of pork (LCA), crop cultivation is the highest contributor in terms of greenhouse gas emissions. Efficient feed conversion is, therefore, important in relation to climate impact. The better the feed conversion ratio, the lower the climate impact as the pig consumes feed more efficiently. Dutch, Danish and German pigs have a low average feed conversion ratio, with reduced environmental consequences.

	Denmark/Danish	Denmark/UK Contract production	UK	Holland	Germany
Application of nitrate (N)	Maximum 140kg N/hectare		Maximum 250kg N/hectare	170kg N/hectare	170kg N/hectare
Storage of slurry	Storage capacity must equate to at least 9 months production. Slurry tank must be covered or have a floating lid.		4 months storage capacity is recommended. 6 months storage capacity from 2012 required.	6-9 months storage capacity – depending on region – required.	Slurry storage requirements are not known and there are no specific requirements in EU legislation.
Slurry spreading and utilisation of nutrients	Slurry spreading may only take place during the growing season, i.e. 1 February to harvest and from harvest to 1 October for winter crops. Minimum requirements for utilisation of nitrogen in pig slurry are 75%. Spreading slurry closer than 300m from vulnerable areas is not permitted.		Apart for the period from August to November, slurry may be spread more or less throughout the year. UK has an action plan requiring the utilisation of nitrogen in pig slurry 25% in 2009 and 35% in 2012.	Requirements covering time of spreading not known and there is no specific EU legislation. Requirements for 60-65% utilisation of nitrogen in the slurry.	Requirements covering time of spreading not known and there is no specific EU legislation. Requirements for 60% utilisation of nitrogen in the slurry.
Feed conversion ratio, finishers (2009) (kg feed/kg daily growth)	2.88	2.88	2.95	2.79	2.89

Transport

Although subject to EU legislation, the UK, Holland and Germany have implemented individual transport standards that are subject to independent third party control and which ensure compliance with national and EU legislation. In Denmark, the pig industry and

abattoirs have taken initiatives themselves aimed at improving welfare standards and controls. As a result, all pigs are transported in small groups and, wherever possible, in pen groups from the farm to reduce stress levels arising from mixing with unfamiliar

animals. Danish abattoirs now require mechanical ventilation in all new vehicles, which is deemed to be crucial for the animals' well-being during transport and one of the reasons for low pig mortality during transport within Denmark – just 0.007% in 2009.

	Denmark/Danish	Denmark/UK Contract production	UK	Holland	Germany
Vehicle requirements	The abattoirs have introduced new requirements for vehicles – such as mechanical ventilation, GPS systems, drinking water and sprinkler systems. Compliance with the requirements is checked on arrival at the abattoir.		Rules based on EU legislation.	Certain requirements additional to EU legislation, e.g. GPS on all vehicles.	Rules based on EU legislation.
Group handling of pigs during transport	Stocking densities according to EU legislation. Pigs to be transported in groups of 15-20 animals and, wherever possible, in pen groups from the farm.		Stocking densities according to EU legislation. Mixing is permitted.	Stocking densities according to EU legislation. Mixing is permitted.	Stocking densities according to EU legislation. Mixing is permitted. There are maximum group sizes for the transportation of piglets (up to 120 for 10kg pigs and 50 for pigs up to up to 30kg).
Training of drivers	Training requirements in place since the beginning of the 1990s.		Training requirements in place since 2008 via EU legislation.	Training requirements in place since 2008 via EU legislation.	Training requirements in place since 2008 via EU legislation.
Mortality during transport	Mortality of 0.007% of pigs transported during 2009.		No statistics available.	No statistics available.	No statistics available.

Abattoir

Careful handling of animals in the pre-slaughter period is vital to ensure good meat quality. Research has shown that handling pigs in small groups, and wherever possible, with their pen mates from

the farm results in calmer and less stressed animals. The introduction of group stunning of pigs has also been shown to be far less stressful than the traditional single-file race system. Today 95%

of pigs are stunned in a group system in Denmark and thorough training of abattoir personnel is an established feature of abattoir management.

	Denmark/Danish	Denmark/UK Contract production	UK	Holland	Germany
Lairage	Handling in small groups.		Mixing allowed but some group handling.	No group handling. Pigs are mixed.	No group handling. Pigs are mixed.
Stunning method	CO ₂ stunning in groups of five to eight pigs. Around 95% of Danish pigs are stunned using this method.		It is estimated that around 20% are stunned in groups.	It is estimated that around 20% are stunned in groups.	It is estimated that around 50% are stunned in groups.
Training	Training of abattoir workers in animal welfare and handling of animals is required.		EU legislation will require training for Animal Welfare Officers from 2013.	EU legislation will require training for Animal Welfare Officers from 2013.	Training requirements from 2011 (Competence Test).

Food safety

The Danish pig industry operates a unique Salmonella surveillance and control programme through each stage of the pig meat production chain. The scheme has been in place since 1993 and has ensured low levels of Salmonella in fresh pig meat (just 1.2% in 2010). Exact comparisons between the various EU countries

are difficult, but the available evidence indicates that Danish levels are low.

Under EU regulations, all countries must operate a national residue surveillance programme and report the results on an annual basis.

In general, there is very low occurrence of residues in Danish pig meat and no positive samples of hormones have been found since the surveillance programme began 1985. Analyses for pesticides and heavy metals have fallen below the required Maximum Residue Level (MRL).

	Denmark/Danish	Denmark/UK Contract production	UK	Holland	Germany
Salmonella monitoring	<p>Whole chain Salmonella surveillance and control programme since 1993 including feed, breeding herds, sow and finisher herds.</p> <p>Public declaration of Salmonella levels in breeding, sow and finisher herds.</p> <p>Financial penalties for Level 2 and 3 herds. In addition, special transport and slaughtering of Level 3 pigs.</p> <p>Fresh meat surveillance, including sampling of pig carcasses at abattoir (carcase swab test).</p>		<p>National action plan: Zoonoses National Control Programme (ZNCP).</p>	<p>Monitoring via IKB system.</p>	<p>Surveillance via QS-system.</p>
Prevalence of Salmonella (fresh pork)	<p>According to the EFSA (2008) study, Salmonella prevalence was 3.3% (samples taken before chilling).</p> <p>In the national control scheme, Salmonella samples are taken after chilling, which gives a more accurate picture of the actual prevalence in fresh meat. In 2010, the prevalence was 1.2%.</p>		<p>Comprises surveillance of finisher herds and fresh meat surveillance.</p> <p>According to EFSA (2008) study, Salmonella prevalence was 13.5% (before chilling).</p> <p>Current results not available.</p>	<p>Comprises monitoring of finisher herds and fresh meat surveillance.</p> <p>Holland did not participate in the EFSA (2008) study.</p> <p>Current results not available.</p>	<p>Comprises monitoring of feed, finisher herds and fresh meat surveillance.</p> <p>Germany did not participate in the EFSA (2008) study.</p> <p>Current results not available.</p>
Residue monitoring	<p>National monitoring programme with around 20,000 samples analysed per year, nearly twice the level required by EU regulations (0.5% of animals slaughtered).</p>		<p>National monitoring programme in accordance with EU regulations.</p>	<p>National monitoring programme in accordance with EU regulations.</p>	<p>National monitoring programme in accordance with EU regulations.</p>

	Denmark/Danish	Denmark/UK Contract production	UK	Holland	Germany
Residue surveillance results.	EU Food Residue Monitoring Report (2008)	EU Food Residue Monitoring Report (2008)	EU Food Residue Monitoring Report (2008)	EU Food Residue Monitoring Report (2008)	EU Food Residue Monitoring Report (2008)
	Growth hormones: 0 Heavy metals: 0 Antibiotics: 7 (2 slaughter pigs, 5 sows) Banned substances: 0	Growth hormones: 0 Heavy metals: 0 Antibiotics: 7 (2 slaughter pigs, 5 sows) Banned substances: 0	Growth hormones: 0 Heavy metals: 0 Antibiotics: 3 Banned substances: 0	Growth hormones: 0 Heavy metals: 1 Antibiotics: 6 Banned substances: 3	Growth hormones: 7 Heavy metals: 39 Antibiotics: 327 Banned substances: 1
	Current Danish results (2010): Antibiotics: 2 Residues: 0	Current Danish results (2010): Antibiotics: 2 Residues: 0			

Source: EC Report for 2008 on the results of residue monitoring in food of animal origin in the Member States

Appendix

Feed conversion ratios (finishers)

Standardized FCR (30-120kg)

Kg feed/kg daily growth (assuming pig feed of similar energy level)

Country/year	2002	2003	2004	2005	2006	2007	2008	2009
Holland	2.76	2.75	2.75	2.75	2.80	2.80	2.87	2.79
Denmark	2.98	2.98	2.96	2.92	2.89	2.90	2.84	2.88
Germany	2.78	2.93	2.94	2.93	2.93	2.89	2.92	2.89
UK	3.06	2.97	3.00	2.88	3.01	2.85	3.04	2.95
Sweden		2.93	2.97	2.98	2.98	2.94	2.98	3.00
Spain					3.18	3.31	3.17	3.05
Belgium	2.94	2.97	2.92	2.93	2.79	2.87	2.93	3.11

Source: Pig Research Centre, Danish Agriculture and Food Council, 2010

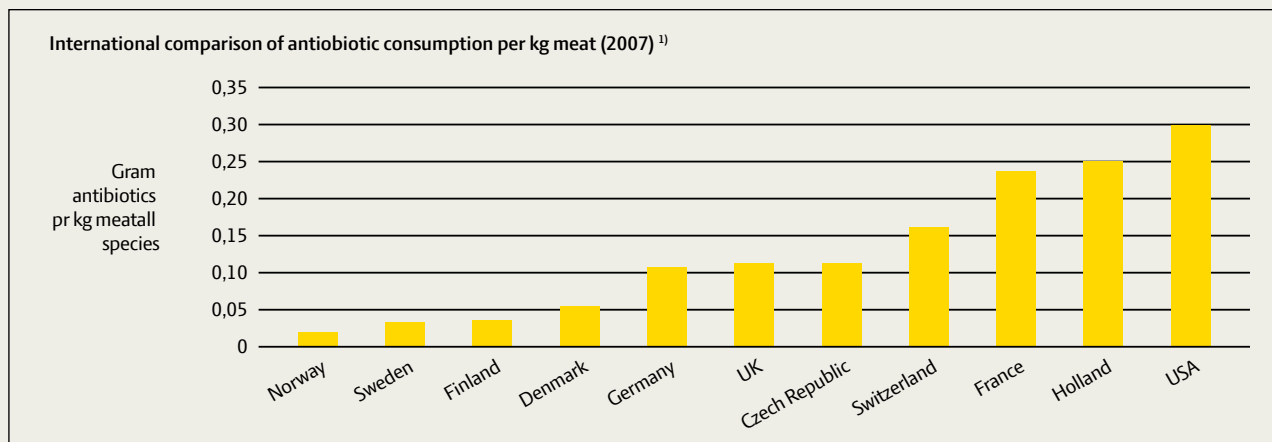
Prevalence of Salmonella in EU according to EFSA 2006-2007 ¹⁾

Prevalence of Salmonella in fresh meat in relation to Denmark

	None	Danish level	Higher	Much higher	No information
Pig meat	0%	1-2%	3-4%	4-10%	> 10%
	Sweden Slovenia	Poland Austria Lithuania	Denmark Czech Republic Lithuania Cyprus	Belgium France Ireland UK	Germany Holland

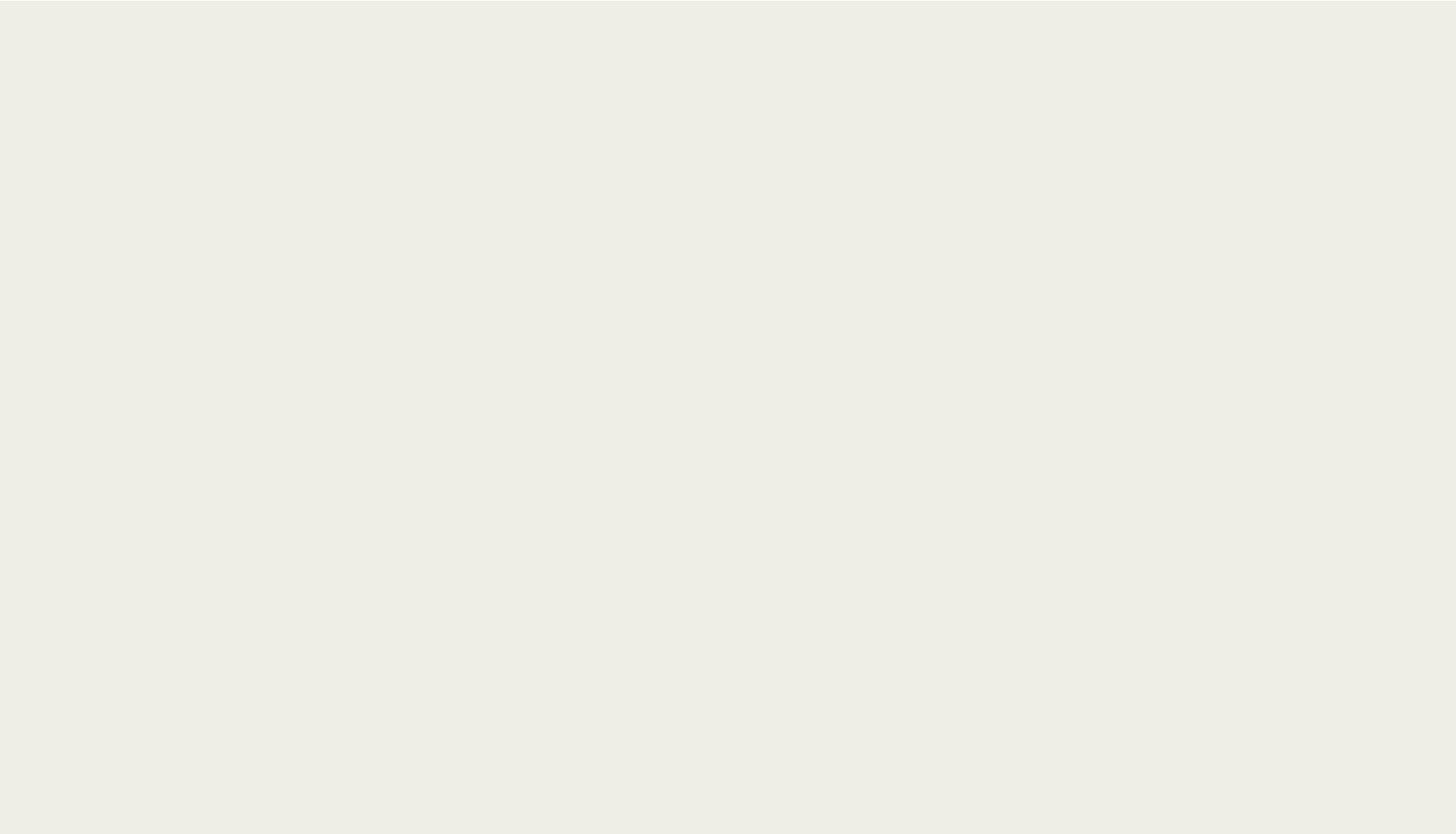
1) The information is based on a carcase swab test before chilling. In Denmark, Salmonella tests are carried out after chilling, which provides a more accurate reflection of Salmonella prevalence in the final product. In 2006/2007, when the EFSA baseline study was carried out, the prevalence was 1.4% in Denmark. In 2010 the prevalence was 1.2% in Denmark.

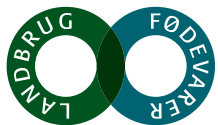
Source: Report of the Task Force on Zoonoses Data Collection on the analysis of the baseline survey on the prevalence of Salmonella in slaughter pigs, in the EU, 2006-2007, EFSA, 2008



1) The figures are based on figures from EFSA (kg antibiotics) and FAO (number kg meat produced).

Source: Joint Opinion on antimicrobial resistance (AMR) focused on zoonotic infections: Scientific Opinion of the European Centre for Disease Prevention and Control; Scientific Opinion of the Panel on Biological Hazards; Opinion of the Committee for Medicinal Products for Veterinary Use; Scientific Opinion of the Scientific Committee on Emerging and Newly Identified Health Risks, EFSA, 2007





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