



*Viva!*

# PIG FARMING: THE INSIDE STORY

A Viva! report by  
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Founder & Director, Viva!

Viva! is a reg charity 1037486



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# 1. INTRODUCTION

## THE GLOBAL PIG INDUSTRY

Pig meat is the most commonly consumed meat in the world. Around 1.3 billion pigs are slaughtered annually for meat worldwide and around 250 million in the European Union (EU) (1).

Around half the world's pork is consumed in China, where urbanisation and rising incomes continue to drive pork consumption upwards.

In October 2015, the EU exported a record volume of pork, with shipments to China being double what they were the year before (2). Exports to Japan also increased by 40 per cent. These two countries represented more than half of total exports (2). Asia is a dominant region in the global pig industry, with major markets China, Japan and Korea showing growth in recent years (2).

In 2013, China produced about 53.73 million metric

tons of pork. This was followed by the United States (10.50 million metric tons), Germany (5.49 million metric tons), Spain (3.43 million metric tons), Brazil (3.28 million metric tons) and Vietnam (3.21 million metric tons) (3). France, Poland and Italy also had high pig meat production that year (3).

In 2014, EU pig production was concentrated in a number of countries, with Denmark, Germany, Spain, France, the Netherlands and Poland having more than two thirds of the breeding pigs between them (4).

It has been stated that more than half of the world's feed crops will soon be eaten by pigs in China (5). In 2010, China's soya imports accounted for more than 50 per cent of the total global market (5). The British pig industry is also an insatiable consumer of soya. Around three-quarters of total soya grown around the world goes into producing protein-rich animal feed for livestock (6). Soya is also used to bulk out processed meat products.

## THE BRITISH PIG INDUSTRY

In 2014, around 4.9 million pigs were housed on pig farms in Britain at any one time, including 349,000 breeding sows (7).

Comparing figures from 2007 (1.45 million tonnes) and 2014 (1.3 million tonnes), pig consumption is down in the UK by 10 per cent, or 150,000 tonnes (8). The average consumption per person has dropped from 23.9 in 2007 to 20.9 kg in 2014 per year (8). Whilst consumption of pig meat (total domestic usage) increased in 2014, it remains much lower than ten years ago – indicating a long term decline.

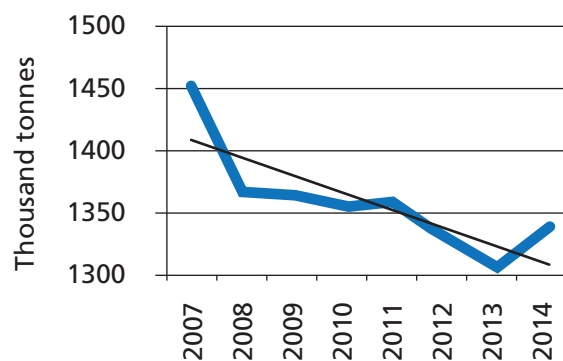
Brits are annually eating 3 kg less pig meat a year than they were in 2007. This is due to the undercover investigations by organisations such as Viva!, health concerns over red and processed meat, as well as environmental concerns (9, 10, 11).

In 2014, approximately 10 million pigs were slaughtered in the UK (7). An average of approximately 200,000 pigs were killed per week in January 2016, and 86,000 tonnes of pig meat produced in January 2016 (12). In 2014, the value of pig meat was at £1.27 billion in the UK (7).

The number of pig holding units in Britain during 2014 was 11,300 and there were 6,000 breeding sow units (13). In 2014, there were 115 abattoirs slaughtering pigs (14).

The average large-scale intensive pig farm in Britain houses around 500-900 breeding sows and the average pig herd size for all farms in the UK is around 75 breeding sows (15). The number of sows in the average

### Pig meat



**Figure 1: Trends in total meat supply (total quantity available after imports and exports are accounted for) in the UK between 2007 and 2014 (Source: Defra 2012 and Defra 2014)**

British herd has been in decline since 1999 following the introduction of a ban on sow stalls. Increasingly however, there is a risk of huge pig factory farms being built in the UK.

At least half of the world's pig meat is produced from intensive systems (16) and today, more than 90 per cent of piglets in Britain are factory farmed – a term that describes modern farming methods because as many animals as possible are crammed together in the smallest possible space. In fact, 98 per cent of UK pigs are fattened (finished) in sheds (15). 93 per cent of growing pigs and 60 per cent of mother pigs in the UK are kept indoors (15).

Feeding, watering and dung clearing are often performed automatically, and the philosophy of mass production is what lies behind it all. The aim of factory farming is to produce as much meat as possible at the lowest possible cost.



**Sow stalls (where pigs were incarcerated throughout their pregnancy), pictured here, were banned in Britain in 1999...**



**...however, farrowing crates are still widely used, pictured here by Viva! investigators on a farm in 2016. 60 per cent of all 350,000 to 400,000 sows in Britain are kept in these crates to give birth until their piglets are taken**



Photo © Viva!

**Pigs in the UK are overwhelmingly housed in barren, slatted pens with no means of escape**

Whilst sow stalls and tethers were banned in Britain from 1999, the government advisory body, the Farm Animal Welfare Council state that the farrowing crate is used for around 60 per cent of all 350,000 (8) to 400,000 (16) British sows. It is a small metal cage in which sows can be imprisoned for up to five weeks, and it is very similar to the sow stall. A sow is placed in the crate one week before she is due to give birth and kept there until her piglets are weaned at 28 days.

Prior to the middle of the 20th century, pig farmers on British farms took a traditional approach with small breeding populations, extensively housed and often fed at least in part on waste food. The 1960s saw a revolution in pig keeping with populations increasing on individual farms, tighter management control of breeding and feeding, greater use of specialist compound diets and an overall intensification. Herds started to be housed wholly indoors (16).

Today, almost all the piglets from outdoor sows are reared intensively indoors, regardless of whether they were born outside. In fact, only 1 to 1.5 per cent of piglets born outdoors who go on to be killed for meat spend their entire lives outside as they are moved into indoor units after weaning (15, 17). The vast majority of pigs, therefore, in Britain are kept indoors for most of their lives.

At least 35 per cent of pigs reared for meat in Britain are housed in utterly barren systems without any straw bedding (15) – they are housed in barren, slatted pens with no privacy or reprieve from other pigs. Slatted accommodation, due to the system of manure (slurry) removal, does not facilitate the use of straw or other manipulable materials. Some enrichment is required by UK law – though this can only be a football or

hanging chain. A welfare insult for these highly intelligent animals.

The UK exports pig meat as fresh or frozen meat, bacon, sausages, processed hams, shoulders and pieces, and live pigs (14, 18). The largest importer of frozen pig meat from the UK is China (19). In 2012, it was reported in the media that Chinese farmers and food companies placed orders for 2,000 British pigs to breed with their domestic animals and farmers estimated that there is enough demand from China to export up to £20 million worth of breeding pigs a year (20, 21). In 2014, pig companies were preparing to send pig semen to China – a deal that was reported to be worth up to £45 million a year to British pig farmers (22).

Denmark is the largest exporter of pork to the UK (23). In 2013, it was revealed that 97 per cent of Denmark's pigs are on factory farms with 1,000 or more animals (19). In 2014 Viva! highlighted a report from the University of Copenhagen which revealed pigs being beaten with metal wrenches and iron chains (24). The report concluded that 'the problem appeared to be widespread, affecting around 6 per cent of all Danish farmers' and that 'between 2010 and 2012, 173 pig farmers were reported to the police for violence against pigs' (24).

Overall, only around 3 per cent of the EU pig herd was in 'backyard farms' (19). In 2013, the average herd size on these farms across the EU was just under 3,000 head. However, in some Eastern Member States, the typical size of 'commercial holdings' was much larger, averaging over 10,000 animals in Lithuania, Romania and Slovenia (19).



In 2015, Viva! investigators documented piglets incarcerated in 'battery cages'

Photo © Viva!

## A TYPICAL BRITISH PIG FARM

Viva! has investigated pig farms throughout the UK, including a Special Investigation whereby 18 pig units across 11 counties were documented (see Pig in Hell video). Viva!'s 'Cruel Britannia' campaign has shone a light into every recess of factory farming in Britain, revealing the institutionalised abuse of animals. More recently, Viva! went undercover in two standard pig factory farms to find out and reveal to the public the reality of British pig farming today. Shockingly, at one of the farms visited, piglets were seen in what can only be described as 'battery cages' (25). This same farm supplies the supermarket Morrison's, and is approved by Red Tractor (26). At another farm, a pig was filmed literally being eaten alive by another (27).

An account of how breeding sows and 'fattening' pigs are treated on a typical British pig farm is below.

### Breeding sows

The main role of the breeding sow is to produce piglets. In the wild, sows build nests from twigs and leaves and can walk many kilometres to find a suitable site. Yet these nesting and rooting instincts are denied on factory farms. Every aspect of a sow's life is managed.

Breeding sows are usually housed in small, barren, concrete pens with no bedding. There is a slatted area for dung to fall through, and what is supposed to be a dry lying area. It usually isn't dry however, and there is nothing for the sows to lie on but filthy wet concrete. The most common system throughout the world is to

house pigs on fully or partly slatted flooring so that the faeces falls through the floor into a collection pit below. There is no escape from this.

The sows remain here, in these pens, until they reach 16 weeks of their pregnancy. Just before their due date the animals are moved to the farrowing shed. The main objective for the farrowing and lactation period is to rear as many piglets as possible, to achieve an adequate weaning weight, and leave the sow in good enough condition to commence the next breeding cycle.

The farrowing crate is used for around 60 per cent of all 350,000 (8) to 400,000 (16) British sows. Rows of metal barred crates incarcerate sows who are barely able to move. The metal frame of the crate is just centimetres larger than the sow's body and severely restricts her movements. She is completely unable to turn around, can scarcely take a step forward or backward, and frequently rubs against the bars when standing up and lying down. The sow can remain like this for five weeks, until her piglets are artificially weaned, and will be subjected to this roughly twice a year.

The misery experienced by mother pigs on modern-day farms is almost unimaginable. Research has shown however that the frustrations they feel is great, and this manifests into abnormal and stereotypic behaviours.

The female gives birth to a litter typically between eight and 16 piglets who suckle before being artificially weaned and removed from their mother for growing/finishing. The sow will be 'served' within five





Photo © Viva!

**Mother and her piglets incarcerated in a UK farrowing crate in 2015**

days of weaning, either via mating with a boar, or through artificial insemination (AI). For this a ‘rape rack’ is often used – a crude restraining device that traps the sow so that she can be forcibly impregnated. She is out of the crate for 16 weeks, and she is then returned to it for the cycle to begin again.

The farrowing crate is sometimes confused with the sow stall or gestation crate (a similar contraption where a sow is confined during pregnancy). The sow stall has been banned in Britain since 1999, but the farrowing crate is still very much in use. Despite the British pig industry frequently suggesting that British welfare standards are the best in the world, other comparable countries have already banned or limited the use of farrowing crates. According to the Farm Animal Welfare Council (FAWC): ‘Norway, Sweden and Switzerland have banned farrowing crates. Free farrowing systems are also being developed and marketed in other



Photo © Viva!

**Juliet Gellatley, Director of Viva!, investigating a pig farm in Norfolk in 2015. These sows are locked in so-called ‘rape racks’ where they can barely move**

European countries, particularly Denmark and the Netherlands, and there is interest in Australia and discussions on this issue in the USA’ (16).

This highly unnatural environment can lead to the sow performing abnormal and stereotypic behaviours such as bar biting, which can indicate prolonged stress, reduced welfare, and even madness.

The industry defends the crate by saying that it protects piglets from being crushed (which is a rare occurrence in the wild). However, overall piglet mortality is roughly the same on outdoor units in Britain (23).

A sow’s life will be cut short at a relatively young age, around three to five years old (48). On average, between 40-50 per cent of sows are replaced each year (28) after producing around six litters. They are sent to the slaughterhouse for low grade meat products. Boars used for breeding are normally killed after three to four years because of their large size and because of the industry’s constant pursuit of ‘genetic improvement’ (48).

### **Separation of mothers and babies**

Piglets are usually weaned between three and four weeks of age, yet under natural conditions, weaning is a gradual process whereby the frequency of suckling gradually reduces and the intake of solid food increases until final completion at 12 to 15 weeks of age. The earlier the weaning age of piglets, the greater the chance of them suffering from health and welfare problems later. Weaning in this abrupt manner is also a psychological trauma to both mother and piglets. At around three weeks of age, the piglets still do not have fully formed immune and digestive systems. They are



Photo © Viva!

**Female pigs are routinely forced into pregnancy, or ‘served’ as the industry calls it, so the cruel cycle can begin again**

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**A breeding sow housed in a farrowing crate – alone and in misery**

forcibly weaned onto solid food which they cannot digest properly and this can lead to scours – diarrhoea – and a failure to thrive. Medication is administered to prevent diarrhoea and the animals are likely to remain on drugs to curb disease and increase growth until close to slaughter age.

Their environment is normally a ‘flat deck’ almost certainly in another windowless shed. Many piglets will share a small pen and beneath their feet is expanded metal or plastic for their faeces to fall through. The pen often contains no bedding, minimal environmental enrichment (perhaps one hanging chain or a ball), and very little to do.

This results in aggression and abnormal behaviours. Paradoxically, as with most types of factory farming, mutilations are carried out in an attempt to control abnormal behaviours which are direct consequences of the intensive farming methods themselves. British piglets are mainly subjected to two types of mutilations: teeth clipping and tail docking. Though they may also suffer ear notching and, rarely, castration. Viva! has filmed mutilations undercover (29).

Despite the Government saying that these mutilations should not be carried out routinely, the industry itself admits that around 80 per cent of British piglets are mutilated each year (29, 30). Tail docking involves the removal of the distal part of the piglet’s tail using a scalpel, clippers or cauterising iron. The teeth of newborn pigs are either clipped or grinded down by the stockperson. Both are obviously painful mutilations, yet neither are carried out with the use of anaesthetic.



**Inquisitive piglets had little to do at this farm in 2015. This can lead to them biting each other**

## A life inside

When the little ‘weaners’ become big enough to be ‘growers’ (or rearing pigs), they are often moved to concrete pens. Typically these are filthy, faeces-covered hovels with an area for dunging and a covered pen for sleeping. The vast majority of growing pigs in the UK spend most of their lives indoors without access to the sun or the chance to express many of their normal behaviours.

About 40 per cent of sows give birth outside (16), yet even the vast majority of piglets born outside will be reared intensively inside (15, 17).

Second stage growers may be moved to an open shed accommodation, where as many as 200 animals weighing up to 70 kg will be packed in together.

## ‘Finishing pigs’

The final, ‘finishing’ stage means pigs may again be moved to another concrete pen. Almost all pigs never see anything that resembles a natural environment, nor one that enables pigs to fulfil their natural instincts. During this stage, the main objective is to grow the pig to slaughter weight as rapidly and efficiently as possible. The most common type of housing for both growing and finishing pigs is in controlled-environment buildings with fully or partly slatted floors. Temperature and air quality are strictly regulated, as finishing pigs can be particularly prone to heat stress. There is no opportunity for them to wallow in mud pools as they would in the wild. Instead they will attempt to wallow (in their instinct to survive) in their own excreta on farms, which increases the risk of disease transmission.

Adult boars may be housed singly in cells that only allow them to turn around.

The lives of pigs on factory farms end at five or six months old, when they are killed for meat. Breeding sows are likely to be killed at around three to five years old, if they survive that long, also killed for 'low grade' meat.

An inevitable accompaniment to every farm is the dumping of dead animals. Viva! has uncovered the bodies of many animals on farms during undercover investigations – in pens with living pigs, in walkways, bins or outside areas – discarded like trash. By law, the farmers should dispose of carcasses by burial to prevent the spread of disease, but this does not always happen.

## The death of pigs

For details on how pigs are slaughtered, see *Sentenced to Death*, a Viva! Report on the Slaughter of Farmed Animals in the UK. For video footage of how pigs are killed and the major welfare problems, see the *Sentenced to Death* video (available from Viva!).



Photo © Viva!

The vast majority of pig farms Viva! has filmed in are squalid hovels which serve as breeding grounds for disease



Photo © Viva!



Photo © Viva!

Piglets and adult pigs often die on farms. Workers often do not bother disposing of the bodies. They are instead dumped in walkways, bins or outside areas



## 2. ABOUT PIGS

Pigs are fun loving, sociable animals full of *joie de vivre*.

They belong to the non-ruminant section of the Artiodactyls (even-toed ungulates) along with about 200 other species, including hippopotamuses. Pigs (also called hogs or boars) are suids (or swine) – a family of artiodactyl mammals. All suids are native to the Old World, ranging from Asia and its islands, to Europe and Africa.

There are up to 16 extant (living) species of suids, including wild boar.

The wild boar has 16 sub-species (all prefixed with *Sus*). The domestic pig (*Sus scrofa domesticus*) is descended from, and a sub-species of, the wild boar (*S. scrofa*), which, of all members of the pig family, occupies the largest range. They originally occurred in Europe, Asia, North Africa and the Malay Archipelago. Included in this native range were a number of island populations, including Britain, Corsica, Sardinia, Japan, Sri Lanka, the Ryukyu Islands, Taiwan, Hainan, Sumatra, Java and smaller islands of the East Indies.

*S. scrofa* was later introduced throughout the world as domesticated animals by humans. Other species of wild pigs include, for example, the warhog (*Phacochoerus ethiopicus*), babirusa (*Babirusa babirusa*) and the African bushpig (*Potamochoerus larvatus*).

Wild boar lived wild in Britain's woodlands until hunted to extinction in the seventeenth century. Remarkably, and against all odds, the wild boar has very small populations once again in Britain (see pages 15-16).

Wild boar (*S. scrofa*) is a gregarious species that started being domesticated in the Near East about 9,000 years ago (31). Over time there was much crossbreeding between Asian and European boars. Importantly, although there was some artificial selection for an easy temperament, **most of the selective breeding of pigs has been for production traits, especially growth and reproduction (32)**. This means that **modern domesticated pigs are similar, cognitively and behaviourally, to wild boars (33)**.

## WILD BOAR – THE LIVING ANCESTOR OF THE DOMESTICATED PIG

Although *S. scrofa* is found in a wide variety of habitats as a result of domestication and introduction to new areas, the typical wild habitat is moist forests and shrublands, especially oak forests and areas where reeds are abundant.

In Europe, wild boars prefer broadleaved forests and especially oak forests, but may also be found in more open habitats such as steppe, Mediterranean shrubland, and farmland, so long as there is water and tree cover nearby (34).

### Diet – largely herbivorous

The species is omnivorous, though stomach and faecal contents analyses reveal that vegetable matter, principally fruits, seeds, roots and tubers, constitutes about 90 per cent of the diet (34).

A field study of the Indonesian wild pig, *S. s. vittatus*, in Ujung Kulon National Park in Java, showed that these animals are predominately frugivorous, feeding on about 50 species of fruits, especially those of strangling figs (*Ficus spp.*), and that they are important seed dispersal agents (34). By comparison, analyses of the stomach contents of wild pigs (also *S. s. vittatus*) in agricultural areas of West Malaysia by Diong, revealed that sugar cane, tapioca and rice were most commonly eaten. Other items commonly consumed by these pigs included soil, earthworms, roots and other vegetable matter and, in mangrove areas, molluscs, crabs and other arthropods and even fish (34).

### Wanderers

Wild pigs are normally most active in the early morning and late afternoon, though they become nocturnal in disturbed areas, where activity usually commences shortly before sunset and continues throughout the night. A total of four to eight hours are spent foraging or travelling to feeding areas. Feeding is generally a social activity (even solitary males may join feeding groups). Radio telemetry has revealed that family pig groups range over an area of 100 to 2,500 hectares, depending on season and food availability. At night, pigs can travel two to 15 km. Over six months, these animals can cover an area of around 10,000 hectares (35). Pigs have a diurnal pattern of activity which peaks at dawn and dusk. Foraging activities during this time comprises of grazing and rooting behaviours.

David Wood-Gush and Alex Stolba, scientists at the University of Edinburgh in Scotland, observed domestic

pigs in a semi-natural enclosure over several years and concluded:

*“Pigs are generally exploratory animals with an appreciable proportion of their time devoted to... examining the distant and immediate environment and in collecting, carrying, manipulating food items... They used their rooting pads to flatten and push items; the snout for grubbing out thick roots. Morsels on the bark and wood were licked, while old tussocks of grass were overturned so that their roots could be eaten. Young grass on the other hand was carefully grazed. In boggy areas they dug more deeply to get at the roots of sedge grasses and these together with the roots of the trees appeared to be prized” (36).*

The adult pigs in this study had been kept in factory farms and yet still they displayed a wide repertoire of behaviours when provided with the opportunity. In fact, given half the chance, pigs will live feral as wild boar. Whilst domesticated pigs have developed longer bodies, shorter legs and large, floppy ears (because pigs in captivity do not need to be so alert), domesticated pigs have in fact retained many of the behaviours and instincts of their wild relatives.

### Social beings

Wild pigs are gregarious, forming herds or ‘sounders’ of varying size depending on locality and season, but usually of between six to 20 individuals, though aggregations of over 100 have been reported (34). The basic social unit is a nucleus of one or more females and their last litters. The female-dominated sounders consist of barren sows and mothers with young led by an old matriarch. Male boars leave their sounder at the age of eight to 15 months, while females either remain with their mothers or establish new territories nearby. Sub adult males may live in loosely knit groups, while adult and elderly males tend to be solitary outside the breeding season. However, the latter tend to stay in relatively close contact with one or two female groups at other times of the year, and sub adult males or mixed sex groups of sub adults may also form longer-term associations.

### Mating – a hard won privilege for males

Farrowing is often synchronized amongst females in the same social groups, which suggests a mechanism for synchronizing the onset of oestrus (34).

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The breeding period in most areas is from November to January, and most mating only lasts a month and a half (though see information on wild boar in the Forest of Dean on pages 15-16). Prior to mating, the males develop their subcutaneous armour, in preparation for confronting rivals. Their testicles double in size and the glands secrete a foamy yellowish liquid. Once ready to reproduce, males travel long distances in search of a sounder of sows, eating little on the way. Once a sounder has been located, the male drives off all young animals and persistently chases the sows. At this point, the male fiercely fights potential rivals. A single male can mate with five to 10 sows (37). Successful males chase females in oestrus, nudging them to show their interest. If the female is also interested, she may respond by urinating, releasing pheromones. If the female does not urinate, the male may give up after several minutes (38). By the end of the rut, males are often badly mauled and have lost one fifth of their body weight. Males do not partake in parenting.

### Piglets born in nests

The gestation period varies according to the age of the expecting mother. For first time mothers, it lasts 114–130 days, while it is 133–140 days in older sows. Sows about to give birth isolate themselves from the main group and build a nest constructed from twigs, grasses and leaves. Farrowing often occurs once a year between March and

May. The average litter consists of four to seven piglets, with the maximum being 10-12. After one or two weeks, the sow and piglets leave the nest and rejoin the group.

### Female cooperation

Should the mother die prematurely, the piglets are adopted by the other sows in the sounder. Females work collectively to protect all offspring within their sounder. When travelling, mothers keep their young in the middle, with adults in the lead and rear. Young are often left with one female as protection, while the rest of the group forages for food (38).

### Growing pigs

Newborn piglets weigh around 600-1,000 grams, and do not leave the lair for their first week of life. By two weeks old, the piglets begin accompanying their mother on her journeys. They take their mother's milk for about three months, and begin copying their mother's feeding behaviours at the age of two to three weeks. The permanent dentition is fully formed by one to two years. Sows are sexually mature at one year old, and males at two years.

However, oestrus usually first occurs after two years in sows, while males begin participating in the rut after four to five years, as they are not permitted to mate by the older males.



Wild boar in the Forest of Dean

Photo: David Slater

## Predators

Wild boar are still hunted mainly by humans but the grey wolf is the main natural predator of wild boar throughout most of its range. Piglets are attacked by animals such as lynx, leopards and brown bears. Tigers once had an impact on wild boar numbers but there are too few left to have a limiting effect on boar populations. On the islands of Komodo, Rinca, and Flores, the boar's main predator is the Komodo dragon.

## Life span

There seem to be few observations of lifespan in the wild and reports vary widely from eight to 25 years. The University of Michigan Zoology Museum says wild boar live to a maximum of nine to ten years and many die by two years (38); others state most dying at four to five years. It also states that sport hunting by humans is a major pressure (38). Boars in captivity have lived for 20 to 27 years.

## BEHAVIOUR OF WILD BOAR IN THE FOREST OF DEAN, GLOUCESTERSHIRE, UK

The Forestry Commission governing the Forest of Dean state that the most often asked question regarding the feral wild boar is 'are they dangerous?'. They say that feral wild boar can be large and unpredictable animals. And unlike the majority of wild animals in Britain, when disturbed by people and domestic dogs the wild boar do not necessarily retreat and hide, and they do have a tendency to defend their young when they feel threatened.

However, both Department of Environment, Food & Rural Affairs (Defra) and the Forestry Commission (39) make clear that the risk of injury and attack is very small indeed (see more below) – the biggest risk to a human is being hurt in a car collision with a boar.

The Forestry Commission state: *"When a family group (known as a sounder) is disturbed by walkers, the tendency is for one of the larger sows to position themselves between the walkers and the young, often accompanied by much snorting, whilst the other sows in the group lead the family to safety. Once the family has moved off the defending sow will usually suddenly turn and run off to rejoin the group. The defending sow may well also be provoked into a mock charge at the intruding people, particularly if that group continue to approach for a better look, or simply because they*

## WILD BOAR BACK IN BRITAIN

Occasional escapes of wild boar from wildlife parks have occurred as early as the 1970s, but since the early 1990s small but significant populations have re-established themselves after escapes and deliberate releases from farms, the number of which has increased as the demand for wild boar meat has grown. Populations of wild boar live in pockets of Kent/East Sussex, Dorset, Forest of Dean (Glos), Devon and Dumfries and Galloway. The Forestry Commission state:

*"The Forest of Dean population is the largest of the breeding populations that now exist in England. The original population established in woodlands near Ross-on-Wye after escaping from a wild boar farm in the area during the 1990's. However, in 2004 a group of around 60-farm reared wild boar were dumped in an illegal release near the village of Staunton on the western edge of the Forest above the Wye Valley. By 2009 it was clear that the two populations had merged and a breeding population was thriving in the Forest" (39).*

*have not noticed the boar. There have also been reports of people being chased by the boar, which may or may not have been mock charges – but no specific reports of people being injured by the boar as a result of such charges. Equally, there are occasions when people have been 'allowed' to get very close to family groups with apparently no reaction by the sows present" (39).*

According to the Forestry Commission, male boar can grow to a significant size, and are less likely to run from people, simply standing and watching as you pass by. The highest number of reports of attacks by feral wild boar in the Forest of Dean relate to attacks on dogs. The suggestion is that feral wild boar defending their young will attack dogs that get too close and ignore the sow's warnings.

The Forestry Commission state: *"Feral wild boar are highly intelligent animals and readily learn new behaviours. The boar do not keep to tight territories, and instead roam over large areas to constantly search out food. They may stay in a particular area for a few days or even a week or so when they find a plentiful food supply, before moving on again.*

## PIG FARMING: THE INSIDE STORY

*Wild boar can reach sexual maturity within their first year, and can breed all year round. When ready to give birth (or farrow) the sow will find a sheltered and secluded location to construct a farrowing nest. Other sows in the group may stay in the area with a heightened level of vigilance and defensive posturing whilst the group is unable to move far. The group will tend to stay in the same location for several weeks after a litter has been born, and local walkers may become accustomed to seeing the boar in the same place for a protracted period. However, when the piglets are ready to move on the group will suddenly leave the area and move on. Litter sizes in the Forest of Dean tend to be large, between six and 10 – this is believed to be a mix of the farmed origin of the boar and the plentiful supply of food.*

*In producing the document 'Feral Wild Boar in England: An Action Plan' Defra commissioned risk assessments*

*that included a review of public safety across Europe where significant numbers and densities of boar exist in the wild. That assessment concluded: 'given their widespread distribution and substantial populations throughout much of their range, the risk of injury and attack is very small'. Within the Forest of Dean, the experience of the Forestry Commission supports the conclusion of the risk assessment. Risks to public safety would appear to be most likely through injuries resulting from road traffic accidents related to feral wild boar; and to less direct impacts such as horses bolting or otherwise reacting to the presence of boar and throwing their riders, or dog walkers being injured whilst 'rescuing' their dog from a boar attack" (39).*

Tragically, wild boar in the UK are hunted and shot. Viva! campaigns to end the Boar War – more at [www.viva.org.uk/what-we-do/our-work/wild-boar](http://www.viva.org.uk/what-we-do/our-work/wild-boar)



Wild boar. Sow and her piglets in the Forest of Dean

Photo: David Slater





The large, sensitive snouts of pigs are perfectly adapted for rooting – an important and enjoyable behaviour that is denied to pigs on the vast majority of farms today

## DOMESTICATED PIGS

### Tactile animals

Pigs have poor eye sight, but acute senses of touch, taste and smell. They can hear in the ultrasound range (32). They can smell a human up to a quarter of a mile away. A pig's snout is also highly sensitive. It is an organ that is highly developed for olfaction, carrying, pushing, rooting and social interactions (32). Pigs can smell roots and tubers that are deep underground – a unique skill that has been exploited since the ancient Babylonian period to find truffles, a subterranean fungus that grows around the roots of oak trees and is highly prized by gourmet chefs.

The desire to root is so strong, intensively farmed pigs persist in nosing the concrete floors. Factory farmed pigs are provided with concentrated feed and spend only a short time eating. They have no opportunity to root around and this is a serious issue, causing frustration and acute chronic boredom for pigs. Sadly, even outdoor pigs are often denied the pleasure of rooting – nose rings being placed through the snout to cause pain when the animal tries to root. Nose ringing can be viewed at [www.youtube.com/watch?v=GSIEK5iWfb4](http://www.youtube.com/watch?v=GSIEK5iWfb4)

Factory farming has not altered a pig's ability to use

tactile information – the highest density of tactile receptors being found in a pig's snout. The phenomenal boredom caused by indoor farming is pitiful. But not only that. Olfaction is the pig's keenest sense. The pig's sense of smell is not limited to finding food, but is used heavily in the social domain including understanding social identity, sexual state, and the emotional state of other pigs (32). Imagine then an animal confined inside a filthy, crammed factory farm such as those that Viva! has repeatedly filmed inside, and the assault on the animals' acute sense of smell.

It is difficult for us to imagine the effect that imprisonment has on young animals who, in the wild, would spend so much time playing, socialising, rooting, running, eating, investigating, wandering and engaging in the natural world.

### Like a pig in...

Pigs are extremely sensitive to climatic extremes and have no sweat glands (except for on the tip of their snouts), nor thick hair cover. They rely on fat for insulation. When it is cold, pigs huddle together for warmth and in the wild would wallow in muddy pools to keep cool in warmer temperatures. Because they only have sweat glands on their noses, it is important they do not overheat. Pigs, like elephants, roll in mud to keep cool – as mud provides evaporative cooling

## PIG FARMING: THE INSIDE STORY

over a much longer time than water. Mud also stops sun burn, dangerous to a pig, and it protects from flies and parasites. Contrary to the popular myth, pigs do not like to roll in dung, or urine for that matter – something they are forced to do in Britain's factory farms. Urine burns the skin and faeces attracts flies, both spread disease.

### Bright sparks

Pigs are extremely sensitive, emotional and bright animals, with long memories. This perhaps makes the routine abuse of pigs in factory farms even worse.

Highly co-operative in social groups, pigs exhibit affection by grooming each other. Research has been carried out which shows pigs can be trained to carry out more tasks than dogs. They can be taught to sit, pirouette, shake hands, complete complex obstacle courses, play bugle horns, and, by gripping a joystick with their snouts, are even capable of playing complex video games.

Stanley Curtis, Professor of Animal Sciences at Pennsylvania State University, says: *"Pigs are amongst the most intelligent animals on Earth"* (40).

Pigs are on a par with sea mammals such as dolphins and sea lions in their understanding of a combination of symbols for actions and objects (eg fetch the ball, drop the frisbee), discriminating among three objects and able to perform the action-object task presented to them (32).

Pigs have also been shown to give emotional responses in anticipation of different events and to have some understanding of time.

### Play time

When deprived of play, as they are in factory farms on the crowded slatted pens, piglets do not grow into normal pigs.

Play is found mainly in the most cognitively complex and adaptable non-human species, such as primates, dogs, dolphins and birds. It also exists in fish and reptiles and complex invertebrates such as octopus. Play appears to be a marker of cognitive complexity.

Piglets are extremely fond of play, with wide and quite complex types of play involving other pigs and objects.



Wallowing is commonly observed in feral pigs and wild boar, but rarely provided for in current housing systems for domestic pigs. It is a behaviour that contributes hugely to their wellbeing

Pigs commonly shake and carry objects (sticks, balls) and toss straw. They wave their head, scamper, jump, hop, paw, pivot, gambol, flop, play fight, push and run after each other (play tag), in a similar way to dogs (32).

According to the authors of a 2015 review of pig cognition, Lori Marino and Christina Colvin:

*“Play in pigs not only satisfies a need for exploration and discovery, it is also critical for healthy development. Play is best stimulated by diverse, hands-on, and renewable objects and materials. So important is this need that insufficient opportunity to explore leads to behavioural abnormalities” (32).*

Unsurprisingly, it has been documented that piglets born in farrowing crates do not develop socio-cognitively as well as those given freedom and an interesting environment; but also sadly, the crated piglets were emotionally depressed (32).

## **i know who you are... and your attentional state!**

Pigs can distinguish between other pigs, including closely related individuals, again showing high intelligence. Mothers recognise their litter from sound alone and piglets can differentiate between known and unknown pigs based on urine samples alone (32). Like dogs, pigs can differentiate between humans, using body size as well as aspects of facial characteristics and sounds, and to a lesser degree, smells (where humans are concerned), as cues.

It isn't surprising that dogs and horses, bred to interact with people, can distinguish between human attentional states; but pigs have been raised to be killed at a young age for meat and they too, prefer and choose people who show them attentiveness over those who don't. Also, pigs can understand a human pointing, eg to find a food reward (32).

## **On the sly**

Primates and other animals, eg dogs and scrub jays, show a complex mental capacity in being able to take the perspective of another individual and can politically manoeuvre, eg show deceit and manipulation. Pigs also show complex abilities to use and manipulate other pigs. For example, when one pig knows a food source but another doesn't, the pig in the know will try to shake off the naïve fellow with various tactics.

## **Emotional pigs**

Emotional contagion is when emotions influence more than one individual in a group. An emotion is aroused after witnessing that emotion in another individual. It is a simple form of empathy. Emotional contagion has been seen in many socially complex species such as dogs, wolves, great apes and a few other nonhuman species, including pigs.

According to Marino and Colvin:

*“In one study, naïve test pigs were exposed to pen mates who had been trained to anticipate upcoming rewarding events (receiving straw and chocolate raisins) or aversive events (social isolation). When the naïve pigs were placed in the company of the trained pigs they adopted the same emotional anticipatory behaviors (eg ear and tail postures, increased cortisol) as the trained pigs with the direct experience. These findings show that not only can pigs connect with the emotions of other pigs, but they can also do so with pigs who are responding emotionally in anticipation of future events” (32).*

## **Big personalities**

As anyone who has been privileged enough to live with pigs will attest, each is as individual as we are. It is utterly ridiculous to try to dismiss individuals within a species as one-dimensional and interchangeable. It may be uncomfortable for meat eaters to acknowledge that every pig has a personality and is a complex individual with his or her own thoughts, understanding and emotions. But, of course, they are!

According to Marino and Colvin:

*“Studies of non-human animals show that personality traits are ubiquitous in the animal kingdom; a wide range of fish, birds and mammals show persistent individual differences that can be organised along core personality dimensions, many of which overlap with those found in humans...”*

*Pigs display consistent behavioural and emotional characteristics that have been described variously as personality, eg coping styles, response types, temperament, behavioural tendencies...” (32).*

# PIG FARMING: THE INSIDE STORY

## Concluding thoughts

Pigs prosper when living in small, stable groups. They thrive on contact with each other and have a complex language. They use a range of vocalisations to maintain social contact, sound alarm and distress to conspecifics. Aggression amongst wild pigs who have ample space is based on a dominance hierarchy related to age and size. This hierarchy is maintained by pigs using threatening and submissive postures and signals. Expression of many of these behaviours on factory farms is limited and this alone can have a serious impact on welfare.

On factory farms, every aspect of pigs lives is managed by the farmer, including companions, stocking rate, reproduction and feed. Pigs are often housed together in groups of the same age, gender and weight which means newly-introduced pigs fight to establish a hierarchy. Pigs can be aggressive towards each other, particularly if they are unfamiliar individuals and Viva! has documented on many pig farms where the smallest piglets are bullied by larger individuals due to overcrowded conditions.

Yet whereas unfamiliar pigs crowded in industrial units will become aggressive and antagonistic, in the wild, pigs are gregarious, sociable animals and the members of a sounder keep close contact at all times, often engaging in social behaviour, such as huddling and grooming. They sleep in communal nests that adults help to maintain by adding fresh bedding materials such as branches and grass.

Given the chance, pigs make caring, loving mothers and their babies do not naturally wean until around three months old. Early weaning causes stress for both mother and young, and the risk of disease for piglets.



A mother pig is very protective of her babies. In the wild she is isolated from the sounder for one to two weeks, and this period of close contact with her piglets encourages the formation of strong bonds. One or two days after giving birth, the sow begins to leave on short foraging trips, though staying close to the nest and her young.

Exploratory behaviour, such as rooting, develops within the first few days of life, and the piglets soon begin on short adventures with their mother. It is heart rending that most mother pigs are trapped in crates to give birth, unable to build nests, deprived of being able to

teach their young ones to forage and explore a beautiful and complex world. They are denied all that is natural and wondrous.

David Wood-Gush and Alex Stolba, University of Edinburgh, after several years of studying domestic pigs in a semi-natural enclosure stated:

*"The social behaviour of the domestic pig seems to resemble, in all important respects, that of the European wild boar, Sus scrofa, when the domestic form is allowed to live in semi-natural conditions" (41).*

Despite being domesticated, pigs retain their essentially wild boar traits, reverting to the wild given half a chance. Pigs are highly intelligent animals who would roam several kilometres each night, rooting and exploring their surroundings. They are fun-loving, social, complex, tactile and full of *joie de vivre*. To house them in dirty, wooden-slatted pens with only a ball or chain for stimulation, if that, is unacceptable, insulting, immoral and cruel. Pigs in Britain (and elsewhere) endure short and brutal lives on farms where their welfare is of far lower importance than production.

Pigs should be left to be... pigs. In mighty oak forests and shrub lands where they belong.

# 3. PIGS FARMED FOR BREEDING

## THE FARROWING CRATE

British farmers boast that they no longer use the metal-barred sow stalls, where pregnant sows spent their lives in almost total immobility, often chained to the floor. They were forced to make a change because of pressure from animal protection organisations and the general public. In fact, many farmers were against the banning of sow stalls.

The European Commission's Scientific Veterinary Committee did not agree. It condemned sow stalls in a 1997 report because of the serious health and welfare

problems (42). The report concluded that sows in stalls have weaker bones and muscles, heart problems and more urinary tract infections.

Sow stalls were phased out and became illegal in Britain during 1999. Across Europe however, they were banned only from 2013, with the exception of four weeks post 'service'. They were banned in New Zealand in 2015 (43) and in Australia by 2017 (44).

Unfortunately, the farrowing crate, which is a close cousin of the sow stall, continues to be commonly used on British pig farms. FAWC have reported that 60 per cent of the 350,000 or more sows who are currently kept indoors in the UK are subject to close confinement (8, 16). In fact, the majority of indoor sows are maintained in farrowing crates, many with partly or fully slatted flooring for manure management as slurry.

The farrowing crate is a small metal crate in which sows are imprisoned for five weeks at a time. She is moved to the crate a week before she is due to give birth (farrow) until her piglets are taken from her. The metal frame of the crate is just a few more centimetres than the sow's body and, as a result, it severely restricts her movement. Some current farrowing systems do not permit any full turning around, some systems may restrict turning for a period and then are opened to allow full turning within a day or so of farrowing, and some systems allow unrestricted turning at all times

### Pigs Kept for Breeding

#### BREEDING SOWS

Age at puberty (av.)	28 weeks (7 mths)
Age when first bred	31.5 weeks (7.9 mths)
In oestrus for	3 weeks
Ovulates for	53 hours
Ovulates after giving birth	5 days after weaning
Type of cycle	Polyoestrus all year
Gestation length	16.3 weeks
Fecundity	Gilts av. 9 live born and sows av. 11.9 live born
Breeding life	2.5 litters/sow/year Sows killed at 3-5 years
Pigs weaned/sow/year	23.2
Pre-weaning mortality	18 per cent

#### BOARS

Age at puberty (av.)	28 weeks (7 mths)
Age when first bred	35 weeks (8.7 mths)
Breeding life	Usually killed at 3-4 years
Sow/boar ratio	25 sows per boar is a 'practical ratio during mating'

#### AT SLAUGHTER

Av. live weight at slaughter	117 kg
Carcass meat production/sow/year	1956 kg

Source: UFAW, Management and Welfare of Farm Animals and BPEX (48, 49)



Photo © Viva!

This sow, filmed at a farm in 2015 by Viva!, will remain in this crate for five weeks before she is transferred to a pen where, within five days, she will be impregnated again

## PIG FARMING: THE INSIDE STORY

(16). The crates prevent sows from nest-building, which is an important behavioural trait of pigs.

### impact on mother sow

The average weaning age for piglets in Britain is between three and four weeks, which means the sow would be restrained in a farrowing crate for this time, plus a week before giving birth. Research has now shown however that peak nesting behaviour occurs during these days (16). Husbandry practices of fostering and batch farrowing (every few weeks rather than weekly) can extend the time in the crate even further. An individual sow may rear a second consecutive litter as a foster sow, thus remaining restrained for up to nine weeks in total (16).

According to FAWC: *“Skin, shoulder, hock and foot lesions are relatively common in sows. These may ... be due to ... the hard nature of the environment. Several of these injuries are particularly linked with farrowing crates, and there were claims from those consulted/visited of reduced shoulder sores in free farrowing systems. With reduced restriction, lower incidences of skin lesions and lameness are also likely... Restriction of nest building is stressful”* (16).

The constraint of the farrowing crate prevents the sow from fulfilling any of her natural maternal instincts. Studies of wild or semi-wild pigs show that sows actually become more active before giving birth. The standard practice of confining sows in the farrowing crate a week before they give birth not only restrains them at a time of increased restlessness but also denies them the privacy they desire by forcing them into close

proximity with other sows. Pregnancy should be a time of restless activity, of collecting sticks and leaves, of nest building. The act of nest building, which is so important for sows, is also denied. With not a strand of straw for comfort, her natural instincts are utterly frustrated. The animals have nothing but a hard floor; sows still attempt to build a nest, pawing at the floor, nuzzling the bars and attempting to turn around.

Sow stalls also increase abnormal behaviour such as sham chewing in which the sow chews the air, and bar-biting, indicating severe frustration and stress, and sows in crates can exhibit behaviour likened to clinical depression. There is certainly no joy of motherhood for today's breeding sow.

Dr. I. Lean, Animal Production Dept., Wye College states (45):

*“Under intensive conditions, the sow has little opportunity to exhibit the behaviour patterns which occur in more natural situations before and during parturition. The extreme restlessness commented on by many workers has led to a re-evaluation of the type of accommodation provided for this time but has not so far led to any changes in common commercial practice”.*

A scientific report by the European Food Safety Authority (EFSA) has concluded that keeping sows in stalls for the first four weeks of pregnancy (which is still permitted 'post-service' in many EU nations) is damaging to their health and welfare. The impact of potentially long-term, close restraint of sows, in terms



of both behavioural and physiological stress, is not fully understood, but it is thought to be 'considerable' (16). For most sows, the issues extend beyond a single litter, with repeated farrowings and lactations across their productive life.

At around three to four weeks old, the piglets are suddenly removed. The sow is given no treatment for drying her milk supply – except for reduced feed. She is made pregnant again a few days after having her babies removed, and taken to another pen where the ordeal begins all over again until her production drops or until she is killed through disease or lameness.

## Legislation

Schedule 8 of The Welfare of Farmed Animals (England) Regulations 2007 (as amended) (and similar legislation in Scotland and Wales) requires that accommodation must allow pigs to turn around without difficulty at all times; that the dimensions of any accommodation used for holding individual pigs must be such that the internal area is no less than the square of the length of the pig; and no internal side is less than 75 per cent of the length of the pig (62). However, this does not apply to a female pig for the period beginning seven days before the predicted day of farrowing and ending when the weaning of her piglets is complete, or if the pig can enter or leave a crate or pen at will.

Norway, Sweden and Switzerland have banned farrowing crates (16). Free farrowing systems are also being developed and marketed in other European countries, particularly Denmark and the Netherlands. There is interest in Australia and discussions on this issue in the United States (16). Instead of crates, 'loose farrowing' is used in some countries, where sows are housed in pens, as opposed to crates. Deep straw housing is also used.

Loose farrowing is a recent development in UK pig farming systems and these systems are just reaching the market or are involved in commercial trials (16). However, the British pig industry has relied on close confinement of sows during the farrowing and suckling period for over 50 years, and continues to do so.

There is hope. The government's own farm animal welfare advisers, FAWC, have urged the pig industry to 'push on' with efforts to replace traditional farrowing crates with free-farrowing systems (16, 46). FAWC states that the 'universal use of such systems should be the aim' and 'adoption of free-farrowing systems should be reviewed in five years, and compared to that

in other countries. If judged necessary for full adoption, the possibility of legislation to phase out farrowing crates should then be considered. For commercial reasons this may require action at EU level' (16). In 2011, the 20:20 Pig Health and Welfare Strategy published by the British Pig Executive (BPEX – now AHDB Pork) committed the industry to focus on 'finding solutions to... freedom around farrowing' (47).

The banning of farrowing crates in some countries has been contentious, with pig industry proponents claiming that piglet loss is higher in loose housing (the majority of piglet mortality occurs during the first 72 hours after birth) though statistical investigations in Switzerland show no significant difference in the overall loss of piglets kept in pens with or without farrowing crates.

## Outdoor arcs in the UK

Around 40 per cent of sows give birth outdoors in the UK in individual arcs with straw beds where they can come and go freely; the piglets are restricted for the first two weeks of their lives. The sows are moved to areas with these arcs before giving birth – they have access to straw which they use to nest build. All piglets are weaned early and around 98 per cent of UK pigs are fattened (finished) in sheds. 93 per cent of growing pigs are kept indoors.

## Piglet mortality

According to the Universities Federation for Animal Welfare, around 18 per cent of piglets do not survive until weaning in the UK (48). Death can be due to several factors such as chilling, starvation, disease, overlying/crushing and cannibalism by the sow. The farrowing crate is supposedly used to prevent sows from accidentally crushing their piglets. In fact, the danger of crushing is a direct consequence of factory farming techniques and the confinement of a crate, which is exasperated by the increasing size of sows, and lack of bedding materials which causes a large amount of stress and frustration to the sow as she is not able to perform natural behaviours. Three quarters of the crushing occurs in the first 48 hours after birth, so even if you were an advocate of crating sows – confinement cannot be argued for after that time.

Piglet mortality is roughly the same on outdoor units as indoor units in Britain (50). Also, an analysis of data from Swiss farms has found that piglet mortalities in farms using loose farrowing systems were no higher than those in farms that used crates (51). Commercial farrowing systems predominantly operate indoor confinement crates or outdoor arks, which represent



the two extremes of sow restraint, substrate provision and environmental control. The 'Volkenroder Pen' in Germany has been shown to reduce piglet mortality to 11 per cent from 17 per cent (52).

In any farrowing system, most deaths occur during the first few hours of life, either from crushing (overlying or trampling) or from hypothermia or starvation, or both. It is unlikely to be possible to design a system in which piglets can suckle with absolutely no risk of crushing. However, any factor which limits piglets' ability to suck freely, such as obstructing bars or an inability of the sow to present the udder conveniently, is likely to increase morbidity and mortality of piglets (16). Easier access to the udder might reduce aggression also (16). Savaging, where sows attack and kill their own piglets, is reported to be less common in free farrowing than in confined systems (16).

It has long been argued, even by sectors of the pig industry, that alternative indoor systems are "as commercially viable as traditional crates" (53).

It is vital to recognise that the crushing of piglets by their mothers is an unnatural phenomenon, and it is evoked by modern farming techniques. Modern pigs are selectively bred to give birth to nine to 12 piglets, instead of four to seven, which is unnatural. Wild boars do not kill their own piglets, partly because they give birth to fewer piglets and can build nests to protect the piglets. The crushing of piglets is a direct result of the way pigs are farmed.

## PIGLETS ON FARMS

Piglets are born naked, with little hair, no fat, little liver glycogen reserves and poor disease immunity. It is essential that they are born into a warm, dry, clean environment so they can escape chilling and quickly find their mother's teat for colostrum. Farm units filmed by Viva! have been far from clean and some piglets have been documented shivering as the heaters in the creep area were not on.

Piglets are born without protective immunity against infection. Until they start to synthesize their own immunoglobulin in sufficient amounts, at four to six weeks of age, they are dependent on the passive transfer of immunity via maternal colostrum. Colostrum provides necessary immune globulins which are directly absorbed prior to gut closure as well as being a rich energy source and gut stimulant. From the minute they are born, piglets find their way to a teat. The sow typically has 14 functional teats, but not all are equally productive.

Indoor sows' milk is low in iron, because the animals are unable to obtain iron from the soil, so the piglets are injected with iron to prevent anaemia (54).

Naturally curious and playful, piglets on farms are deprived of the complex, engaging environment they would normally encounter in a more naturalistic setting, and this has a profound effect on their behavioural development.



## EARLY WEANING

Piglets are weaned at an unnaturally early age (usually three to four weeks in the UK but sometimes even earlier), at a time when they would normally nurse frequently and depend on the mother sow for protection. Lack of outlets for normal exploratory nibbling, chewing and foraging behaviour, combined with early weaning practices, leads to the development of abnormal oral behaviour, such as tail biting and belly nosing.

The most critical time in a pig's life is from birth to weaning. At the young age that piglets are routinely weaned, they have still a strong need to suckle and are deprived of their mother. They nibble the ears and tails of their pen mates. It is accepted that these behaviours are abnormal and reflect poor welfare conditions (55). McKinnon et al. state:

*“The greatly increased incidence of chewing and nuzzling appear to be mainly a result of weaning age but they are also affected by the subsequent environment, being more frequent in flat decks than in straw-based housing systems” (56).*

In factory farms, piglets are removed from their mothers early so that the sow can be impregnated as soon as possible. This enables farmers to raise more than two litters per sow, per year. The ‘breeding ‘stock’ are treated as machines, with little consideration for the well-being of sows or piglets.

Piglets taken from their mothers at two to four weeks of age, are mixed with other (unfamiliar) piglets and given antibiotic-laced feed. They are then incarcerated in large concrete or slatted pens (or cages, as exposed by Viva! in 2015 on a Red Tractor approved farm that supplied Morrisons (25) which contain nothing to engage the lively, inquisitive minds of the young piglets).

Weaning would naturally occur at between 12 and 15 weeks. However, such a lengthy lactation is undesirable to farmers as the lactating sows seldom come on heat (45). Intensive production means sows must be made pregnant again as soon as possible. By taking her piglets away, a sow comes on heat and can be made pregnant again.

Piglets can be weaned at one day, and this has been practiced, but such animals need clean, warm surroundings and a feed similar to sow's milk. The costs



Photo © Viva!

incurred have deterred producers from taking piglets this young from their mothers, rather than the welfare implications.

## BOARS

Breeding boars are usually supplied by a breeding company who analyses the feed conversion, growth rate and carcass quality of siblings. They are usually selected at six to eight months old, and will start with four to six sows. As libido and fertility increases, the ratio increases to about one boar per 25 sows. Young boars are often group housed in group pens, possibly with straw, but incarcerated individually when older. Boars lead a life of utter frustration and boredom, these large, fiercely intelligent animals (the size of a Shetland pony) are left in (often filthy) pens with absolutely nothing to do.

## GILTS

Gilts are selected for breeding on growth rate, feed conversion and reproductive history of their dams and sires. Also their own anatomy. They used to not be bred at first oestrus, yet intensive production has changed this and nowadays they are mated as early as possible. Contact with a male by sight, sound or smell triggers first oestrus. Gilts who fail to come into heat by eight months are killed.

Some farms synchronise oestrus in batches of sows by giving hormones. Gonadotropins stimulate oestrus and progestogens may also be used – synchronisation is adopted to avoid costs of staff being paid at night or weekends, and to balance up litters.

Piglets at a very young age are commonly subjected to a series of highly painful procedures such as teeth clipping, tail docking and ear notching. These are carried out without any pain-relief



Photo © Viva!

## 4. MUTILATIONS

Shortly after birth, pigs are subjected to a number of painful mutilations, including teeth clipping, tail docking, and ear notching. Male piglets may also be castrated though this is very rare in Britain. All of these mutilations are routinely performed without the benefit of any pain-relieving anesthetics or analgesics. Mutilations involve handling stress, acute pain (short term, arising from tissue damage during the procedure) and the possibility of chronic pain (longer term, arising from nerve damage).

Any farm that undertakes the mutilation of animals to prevent them injuring each other indicates very poor management and welfare. FAWC states (30):

*“Mutilations can cause considerable pain and therefore constitute a major welfare insult to farm animals... on ethical grounds, the mutilations of livestock is undesirable”.*

### CASTRATION

Piglets are castrated to ease their management and reduce the risk of ‘boar taint’ in the meat (57). The non-anaesthetised castration of young boars (male pigs) is regarded as an infringement of the wellbeing and integrity of the animal. Partly for that reason, the issue of the castration of male piglets has grown in importance in the last decade (58).

Very few male piglets are castrated in the UK (only 1-2 per cent). Most of those will be chemically castrated. The RSPCA assurance scheme does not allow surgical castration but will approve chemical castration, where Improvac is given to shrink the testes, provided justification is given. Ironically, the industry scheme, Red Tractor does not approve any castration.

The low percentage of castrated males is associated with slaughtering pigs for meat at a relatively young age, which reduces the risk of boar taint (30). However, the UK imports approximately half of its pig meat, and most male piglets that go on to produce pig meat for import to Britain are castrated (30).

Whilst it is no longer a common procedure in the UK, castration is widely practiced elsewhere in Europe and beyond. In 2011, at the invitation of the European Commission and the Belgian Presidency, several EU main stakeholders agreed on the European Declaration on Alternatives to Surgical Castration of Pigs. The main goal of this is to end the surgical castration of pigs from January 2018 by voluntary agreement. Under current EU legislation, minimum standards for the protection of pigs are provided by the Council Directive 2008/120/EC (59). The European Declaration was signed in December 2010. Until then it was estimated that out of the 250 million pigs reared in

the EU, 125 million were male, and 79 per cent (100 million) of them were castrated without anaesthesia or analgesia (60).

According to the European Declaration, since January 2012 all castrated pigs should have been treated with prolonged analgesia and/or anaesthesia, and in it was information on the development of methods to phase out the surgical castration of pigs by 2018 (61).

The Defra Code of Recommendations for the Welfare of Livestock: Pigs states that castration is a mutilation that should be avoided wherever possible (62). Viva! holds that all mutilations, including castrations, should be prohibited for farmed animals.

## PERMANENT IDENTIFICATION

Individual identification for management purposes is done by ear notching, ear tagging, tattooing (usually of the ear but sometimes on the shoulder) or micro-chipping. The procedures are normally carried out without anaesthesia or analgesia, and involve handling stress and acute pain from tissue damage.

Ear notching involves cutting several notches around the tip of each ear using notching pliers (other methods of identification such as ear tagging are also used). Research has indicated that the combined process of tail docking and ear notching piglets elicits a stronger pain response than handling alone (63). During the process, piglets who were tail docked and ear notched vocalised at a significantly higher frequency than those who went through a similar handling procedure without the mutilations (63).

A more recent study demonstrates that piglets display pain-related behaviour such as being awake and inactive after being mutilated (64).

## TEETH CLIPPING

Piglets routinely have their needle teeth (eight small, tusk-shaped teeth: four on the top and four on the bottom) clipped or ground to remove the sharp ends that can cause damage to the sows' teats and to prevent facial injuries to other piglets as they compete for access to teats.

In 2011, FAWC stated that they were told by the British pig industry that reduction of the sharp canine teeth by clipping or grinding shortly after birth is carried out on a high proportion of indoor-housed piglets and a smaller percentage of outdoor-housed piglets in the UK (30).



**Undercover filming by Viva! in 2011 revealed the truth of millions of piglets on British farms having their teeth clipped and tails docked without anaesthetic**

The majority of farmers in Britain use sharp clippers to cut the teeth to gum level, which will open the pulp cavity. This is carried out without anaesthesia or analgesia and involves handling stress (30). If performed by unskilled operators or with poor equipment, splintering of the tooth and damage to the gum can occur, with chronic pain and risk of infection (30) (65).

Viva! has documented the painful procedure and it was reported in the *Daily Mail* (29). Whilst it is carried out to minimise damage to the sows' teats and the cheeks of other piglets in the litter, this damage is superficial. The reason that piglets injure their mothers' teats is that the litter sizes have increased so much, from around five piglets to up to 12. Also because the sow cannot remove herself from the piglets if inside a crate. An obvious solution is to reverse the breeding process so that the litter size is reduced. This is said with irony, as this intensive industry will never do this – the solution is to not buy meat, of course.

## TAIL DOCKING

One of the most problematic animal welfare issues in modern pig production is tail biting. This abnormal behaviour compromises the well-being of the animals and can seriously impair animal health. Tail biting has a multifactorial origin and occurs mainly in fattening pigs. High stocking densities, poor environment and bad air quality are viewed as important factors. However, it is presumed that a plurality of internal and external motivators in intensive pig production can trigger this behaviour, which is not reported in wild boars (66).

## PIG FARMING: THE INSIDE STORY

Tail biting is an injurious, abnormal behaviour that occurs sporadically and unpredictably on factory farms. It involves progressive chewing of the tail from a mild scratch condition to one in which the entire tail is removed. Tail biting appears to be a result of redirected foraging behaviour in the barren environment. Once blood is drawn, the behaviour escalates.

Tail bitten pigs are also more likely to exhibit pleuritis (inflammation of the membranes surrounding the lungs) and lung abscesses (67).

Tail docking, or the amputation of the lower half of a pig's tail, is carried out when there is a risk of pigs biting each other's tails when they reach the 'finishing' stage. This risk is very high on a factory farm. A national survey by Exeter University in 1998 revealed that almost 100 per cent of indoor pig units tail dock (68).

In the wild, pigs do not bite each other's tails. It is accepted by the pig industry that tail and ear biting are manifestations of the poor conditions of factory farms. Lean states that they are:

*"Aberrant behaviours, suggesting management is at fault in being unable to satisfy the behavioural needs of pigs"* (45).

Poor housing, early weaning, bad diet and a buildup of gases such as ammonia and carbon dioxide all cause tail biting. It is not the consequence of general aggression.

Several factors can increase the risk of tail biting, including health problems, delayed detection of a tail biting outbreak and lack of environmental enrichment.

In 1999, the Pig Improvement Company (PIC) Veterinary Manager stated:

*"Aggressive behaviour is targeting at the head not the rear and tail biting is more likely to be a sign of frustration caused by insufficient nutrition or lack of feeding space"* (69).

The tail is severed using clippers, a hot cauterising iron or a scalpel within seven days of birth, without anaesthesia or analgesia. The amount of tail removed can vary between operators from very little (tipping) to more than half. Tail docking is accompanied by handling stress and short term pain from tissue damage. It causes physiological and behavioural responses indicating acute stress when performed on

Found by Viva! investigators on a farm in 2015. Around 80 per cent of British piglets have their tails crudely severed using clippers, a hot cauterising iron or a scalpel



Photo © Viva!

six day old pigs. These include increased blood cortisol concentrations, reduced white blood cell count and increased sitting and scooting behaviour (70). Docked tails may develop neuromas, which are associated with increased sensitivity to pain (71). The extent of medium term and chronic pain is uncertain. A veterinarian does not need to be present if the amputation is carried out during the first week of the piglet's life. Many animal welfare scientists believe tail docking is a painful procedure and should be avoided (72).

Remarkably, the reason for the tail docking is the belief that once the lower part of the tail is cut off, the remainder is more sensitive and pigs quickly escape when others try to bite it. This implies that the cut tail is painful. If tails are cut, another problem arises. Lean states that docked piglets will often show *"increased levels of neck and shoulder biting"* (45).

Badly performed tail docking can lead to infections which may spread to the spinal cord causing spinal abscesses and deep pain. Arey (73) states:

*"Wounds can become infected, resulting in abscessations of the hindquarters and... spinal column. Secondary infection may occur in the lungs, kidney, joints and other parts"*.

Research reveals that tail biting (also bar biting in stall-housed sows in Europe, stone chewing in outdoor pigs, and high levels of aggression) are partly due to pigs being undernourished. Growing pigs may experience specific nutrient restriction when they are fed a single feed unsuitable for their age and weight.

Breeding pigs can be fed restricted rations to stop them putting on weight and to make them breed efficiently. In other words, they tail bite because they are hungry.

Adult pigs nearing the end of their short and miserable lives are housed in pens like these before being sent to slaughter



Photo © Viva!

The pig's response in all cases is to attempt to forage. In the wild, pigs would find food by digging, pushing, gnawing and rooting; however, many indoor farming environments have little or no potential to accommodate these behaviours.

This 'compromises welfare' because the pig turns his or her attention to tail biting, excessive drinking or vacuum chewing.

## POOR HOUSING AND TAIL BITING

Pigs are extremely intelligent, social animals who would naturally spend much of their lives exploring complex environments. Most fattening pigs are housed in densely stocked, barren units where they have nothing to do.

Pig herds in Britain are increasing in size. In 2013, Viva! campaigned against the mega-factory farm in Foston, Derbyshire (74). The facility proposed by Midland Pig Producers (MPP) would have imprisoned up to 26,000 pigs at a time and sent around 1,000 pigs a week to slaughter. Over 42,000 people signed a petition against the farm in Foston and Midland Pig Producers withdrew their application in 2015 (75). In September 2015, the company appealed against a decision not to grant it a permit to operate (76). The threat of US-style intensive farming is becoming increasingly problematic.

Derbyshire County Council were to decide the fate of plans for what would be one of the largest pig farms Britain has ever known. However, in January 2016, MPP announced they were closing two farms including one at Foston (BBC Midlands Today, 27 January 2016).

Group housing is associated with increased risks of damaging behaviours including tail biting, belly nosing, excessive aggression and cannibalism in pigs. Evidence

indicates that tail biting pigs are likely to be frustrated and hence experience reduced welfare. Tail biting is considered an abnormal behaviour, and the need to perform exploration and foraging behaviour is considered to be a major underlying motivation. The occurrence of tail biting has a multi-factorial origin but there is evidence that some causal factors hold more weight, such as the absence of straw, the presence of slatted floors and a barren environment. Absence of straw or a particulate, rootable substrate is an important hazard for tail biting. Despite the fact that UK farms often offer chains, it was stated by the European Food Safety Authority in 2007 in a Scientific Opinion that there is little evidence that provision of toys such as chains, chewing sticks and balls reduce the risk of tail biting (77). Heritability of tail biting has been evaluated and its value found to be high. Under common intensive farming conditions, tail docking reduces the frequency of tail biting, but does not completely eliminate the problem when unfavourable conditions persist (77).

Arey (1991) states (73):

*"The prevention of tail biting should be approached by improving the conditions in which pigs are kept. The first measures which should be taken are the provision of bedding and more space to prevent overcrowding... tail biting is a sign that something is wrong with the system whether it is due to boredom, overcrowding, poor ventilation or diet. Its prevention should be of paramount importance".*

The Code of Recommendations for the Welfare of Livestock: Pigs and The Welfare of Farmed Animals (England) (Amendment) Regulations 2003 (S.I. 2003 No. 229), Schedule 6, Part II, paragraph 21 and 23

## PIG FARMING: THE INSIDE STORY



Farmers resort to mutilating piglets to prevent tail biting by bored, frustrated pigs in pens like this one later in life

Photo © Viva!

states that routine tail docking and teeth clipping or grinding is not permitted; however, tail docking can be carried out where there is evidence that injuries to sows' teats or to other pigs' ears or tails have occurred (62). This prohibition of routine tail docking and tooth clipping appears to be an important step for pig welfare. However, the provision that they may be carried out if there is evidence of tail biting or damage to sows' teats makes the law worthless.

This approach misunderstands the problem. As stated previously in this report, tail biting occurs because of factory farm conditions such as early weaning and overcrowded and barren conditions, not because of a failure to tail dock. Ironically, the law as it stands encourages farmers to think in terms of mutilating pigs if they are to be kept in intensive units.

In recent years, pig meat consumers have desired leaner meat, which has in turn influenced the breeding, housing and management of pigs on farms. It has also led the industry to manipulate pig feed and the environment, as well as genetically engineer, in order to produce carcasses low in subcutaneous fat, in the fastest period of time. The law is seriously weak and flawed when it comes to protecting farmed animals. At the very least, all mutilations should be outlawed. As should the conditions which lead to them being deemed necessary by the intensive farming industry.



Pigs are viewed as commodities by the farming industry who rear them in ways that benefits production, rather than welfare

Photo © Viva!

# 5. ANIMAL FEED

## NUTRITION AND FEEDING

The pig has one stomach and is similar to humans in anatomy and physiology. The major component of most pig diets are cereals, cereal by products and animal and vegetable proteins – particularly from soya.

The major nutritional objective of the finishing phase is to produce pigs at market weight which meet the specification for best carcass price. Whilst *ad libitum* feeding is possible, in some circumstances, feed restriction in the final stages of fattening is sometimes deemed 'necessary'. It used to be common practice to feed pigs on kitchen waste, particularly in smallholder systems. However, due to the disease (particularly foot and mouth) risk associated with it, feeding swill is banned Europe-wide. The use of mammalian meat and bone meal (MBM) was also banned because it caused BSE; the ban was subsequently extended to almost all forms of processed animal protein (PAP).

Given a choice, pigs prefer fresh feed, and of course they enjoy rooting (denied on all indoor units). But the same dry and liquid feed is given because it is easier to handle and it is cheaper, adding to the boredom and frustration of these intelligent animals. Feeds for 'finishing' pigs are usually based on cereals and plant proteins, most commonly soya bean meal. Some farms reduce costs by using industrial by-products from the human food and drink sector such as wheat feed, vegetable wastes and brewery and distillery products – many of these are fed in liquid form (48).

The objective of farmers at the 'finishing phase' is to produce pigs at a weight which meets the requirements of best price, which usually means meeting a contract grading specification for carcass weight and leanness, usually measured as subcutaneous fat thickness at one or more points on the animal's back. Pigs have been genetically manipulated to put on muscle rather than fat; however, so-called genetically inferior animals which put on fat in finishing will have food withheld or reduced, as will pigs kept for products such as Parma ham, which require heavier animals at slaughter. Restricted feed – hunger – can lead to aggression and to some animals dominating the feed troughs (48).

## Soya fed to pigs – wreaking havoc on the planet

European agricultural policy, including the ban on the use of meat and bonemeal in animal feed since the BSE outbreak, has driven a dependence on imported soya to provide protein for fast growth. According to the United Nations FAO, almost all of the soyameal produced worldwide is used for animal feed (78). The vast majority of the world's soya – around 75 per cent – is destined for the production of protein-rich animal feed for livestock, especially poultry and pigs (79). One third of Brazil's soya is exported to the EU mainly to feed pigs and poultry.

Between 1967 and 2007 pork production increased globally by nearly 300 per cent, egg production by over 350 per cent and poultry by more than 700 per cent. As a result, demand for soya-based feed has skyrocketed too – at the expense of some of the world's most vital forests, grasslands and savannahs being cleared for soya fields. Approximately 80 per cent of the world's soya is now genetically modified (GM) (79).

More than 30 million tonnes of soya are imported into Europe every year purely for livestock from areas totalling around 18 million hectares across the Americas. Almost all this soya is genetically modified because 90–99 per cent of the soya cultivated in the main producing countries consist of GM varieties (80).

According to Friends of the Earth UK: *"soya grown and imported from Latin America has become the main source of protein in animal feed. It has created a soya boom where vast swathes of land in Brazil, Paraguay and Argentina have been converted for largescale production – causing deforestation, greenhouse gas emissions and the loss of valuable wildlife habitat. The livestock sector is responsible for an estimated 18 per cent of global greenhouse gas emissions and deforestation is a significant source. Reducing the impact of the livestock sector is critical if we are to prevent dangerous climate change. Soya farming has devastating local impacts, contaminating soil and water with pesticides and other inputs. It has also been linked to human rights abuses, forced evictions and intimidation of local communities. Small-scale farmers are pushed out by the vast soy monocultures and*

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*struggle to survive in the global agroindustry. Many are forced to sell up and leave the land. Crops for human consumption are being replaced by soya plantations for animal feed and biofuels. This pressure on food supplies has added to the recent volatility in global food prices, exacerbating global hunger” (81).*

More at [www.vivahealth.org.uk/soya/the-environment](http://www.vivahealth.org.uk/soya/the-environment)





# 6. PiG SiCK – DiSEASES ON FACTORY FARMS

Disease is running rife through Britain's pig factory farms. This means that animals are suffering sometimes excruciating pain, and that powerful drugs are given through most of the pigs' lives. Filthy conditions, overcrowding and stress all ensure that factory farms remain bug infested.

Pigs housed on factory farms are susceptible to a number of different diseases which can spread rapidly within and between herds. Highly infectious exotic diseases, such as foot and mouth disease, Classical Swine Fever (CSF) and African Swine Fever, are controlled in many countries by national eradication programmes, in which all pigs in any herd where the disease is detected are killed and their carcasses buried or burnt to prevent disease-spread. Other, less serious diseases exist endemically within herds where their effects on health and welfare can be minimised. Many of these diseases, such as Enzootic Pneumonia (EP), Porcine Respiratory and Reproductive Syndrome (PRRS), erysipelas, *Escherichia coli*, and Post-Weaning Multisystemic Wasting Syndrome (PMWS), are controlled by routine vaccines.

For many respiratory and enteric diseases, their prevalence gets worse when animals are poorly housed.

## HEALTH iMPACTS OF EARLY WEANiNG

Early weaning stress can profoundly alter immune and physiology responses, and clinical outcomes to subsequent infectious pathogen challenge. Weaning on most farms occurs when the digestive capacity of the piglets have not developed. This means that weaned piglets have difficulties coping with solid food. Additionally, disease resistance is low, temperature needs are high, and breaking the piglet-sow bond creates severe stress to both mother and baby, which means they are both more susceptible to disease.

As soon as the piglets are weaned, they are confronted with a sudden large proportion of non-milk food and the levels of digestive enzymes to break down these products are low.

Scouring (severe diarrhoea) is a major problem across Britain's pig farms. Piglets are dosed with drugs on a daily basis to counteract this. Young pigs also do not produce the enzymes to digest fibre. Fibre from wheat and barley can reduce uptake of nutrients and cause non-specific colitis.

Early weaning encourages pigs to injure one another and promotes disease – meaning continued reliance on antibiotics and other medication.

## iNJURiES CAUSE DiSEASE

As well as being susceptible to many diseases, pigs in confined, intensive units face injury from each other. This is from so-called 'vices', which include tail biting, and ear and flank chewing.

An important factor in the development of such 'vices' is the greasy pig disease or 'exudative epidermitis'. The disease can kill up to 90 per cent of younger pigs affected. A skin of wet eczema begins on the top of the tail or ears, often started by a combination of feed contaminating the skin and splitting of the skin caused by injury from, for example, bites or rough concrete flooring. Newly weaned piglets are often put onto flat decks which have a rough surface, and are housed with no bedding. The injuries allow *Staphylococcus hyicus* to invade, and this causes infection. Other pigs are attracted to the lesions and eventually this leads to biting.



Pigs suffer injuries from other pigs; and also from rubbing themselves against the sides of their pens and crates

Photo © Viva!

# PIG FARMING: THE INSIDE STORY



Treatments involve determining the antibiotic sensitivity of the *Staphylococcus hyicus* if this is a part of the problem and medicating feed for seven to 10 days, injecting traumatised pigs long-acting antibiotics, management control and prevention.

## Respiratory disease

Respiratory disease is a major concern in 'finishing' pigs. It is often a multifactorial syndrome caused by the interactions of several pathogens as well as environmental, management and genetic factors. Severity is dependent upon the pathogens and housing and management factors.

## Pleuropneumonia

Pleuropneumonia in pigs is spread rapidly by airborne routes or by direct contact, making factory farms an ideal breeding place. Considerable economic losses are seen due to mortality, growth retardation and the increased need for medication with antibiotics. It is a highly contagious, often fatal, respiratory disease that is a major problem in most of Europe and the United States. The disease is caused by *Actinobacillus pleuropneumoniae* and causes depression, anorexia, high fever and laboured breathing. Blood stained froth may be seen at the mouth. It often kills 30-50 per cent of the pigs infected.

## Porcine reproductive and respiratory syndrome (Blue ear)

This viral infection causes laboured breathing, occasional fever, loss of appetite, abortion, an increase in still births and many piglets born to infected mothers are weak, splay-legged and die. The disease causes major problems throughout pig farming industries. The disease spreads within a unit by direct contact between pigs. Nasal secretions are the main source of infection, although contact with faeces in dirty units can also

spread the virus. Early weaned piglets are vulnerable to the disease.

## Porcine Respiratory Disease Complex (PRDC)

The term 'Porcine Respiratory Disease Complex' (PRDC) has been used to describe the complex characterised by respiratory symptoms and poor growth in 'finishing' pigs.

PRDC has a multifactorial etiology involving Porcine Reproductive and Respiratory Syndrome Virus (PRRSV), Swine Influenza Virus (SIV), Porcine Circovirus (PCV) and a variety of bacteria.

Vaccination plays an important role in the control of PRDC, though its success depends on the immune status and age of pigs, the immunogenicity of the vaccine, housing and the condition of the pig's immune system.

## Pneumonic pasteurellosis

Pneumonic pasteurellosis occurs throughout the world and is usually seen in association with other infectious diseases or environmental factors that impair pulmonary function. There are both primary and secondary forms of the disease.

The bacteria invades already damaged lungs, causing fever, coughing, lethargy, breathing difficulties and sometimes death. It is transmitted by contact and ingestion. Pneumonic pasteurellosis is difficult to treat effectively.

## Scours (severe diarrhoea)

Scours, or severe diarrhoea, is extremely common in pigs. Of all the diseases in the suckling piglet, diarrhoea is the most common and probably the most important. In some outbreaks, it is responsible for high morbidity and mortality. It is caused by many factors, though the environmental factors associated with scours is telling:

- Poor hygiene
- Lack of bedding (many indoor units provide no bedding and this leads to reduced temperature control and lack of benefit from roughage intake)
- Unclean bedding (if pens do contain straw, it is often filthy and this spreads infection)
- Large group size
- Overcrowding
- Dirty water or lack of provision
- Poor feed bin hygiene

In poor environments, scours can occur without the major infectious causes being present.

The most common infectious cause of scours in growing pigs are: swine dysentery; PIA (Porcine Intestinal Adenomatosis) or ileitis and colitis (a vague term used to describe varying degrees of scour). Less common causes are salmonella, *E. coli* and parasitic infections. Severity is influenced by housing and diet. Salmonella may infect a pig with no disease occurring, but other types of salmonella cause acute generalised illness and can cause scours in people.

## Salmonella

Salmonella bacteria multiply mainly in the intestines of young growing pigs but also in some sows.

Clinical signs of salmonella infection may include any combination of the following:

- High temperature
- Depression
- Loss of appetite
- Congestion of the ears, snout and tail
- Pneumonia
- Coughing
- Nervous signs
- A smelly and/or bloody diarrhoea
- Death may occur in the acute phase of the disease

Salmonella can be serious, causing blood poisoning, acute or chronic enteritis and wasting (mainly in pigs between weaning and three months). The septicaemic (blood poisoning) form kills almost all of its victims. Salmonella is caused by poor hygiene, overcrowding, stress by moving and mixing and contamination of feed by birds, rats and mice.

There has been huge media exposure of the effects of Salmonella poisoning in people, but rarely mentioned is the pain and suffering of pigs.

Factory farms may help spread disease as the bacterium infects young piglets in contaminated faeces. Salmonellae are also in slurry and dust within pig units – some of the indoor farms visited by Viva! have been thick with dust and slurry pits had not been cleaned out – the stench pervading every corner. Further, live transport and markets transmit this disease.

## Escherichia coli

*Escherichia coli* (*E. coli*) causes blood poisoning in newly born piglets, diarrhoea in newly born and weaned piglets, oedema disease (usually in newly weaned piglets), cystitis and mastitis in adult sows.

The bacteria, *E. coli*, is in every pig. Disease occurs when pathogenic (disease-carrying) strains invade a pig herd or when the immune system of a pig is under stress. For example, starvation, lack of water or other forms of stress, such as a piglet being taken from the mother too young, disturbs the normal balance and allows disease-causing strains of *E. coli* to flourish in the small intestine and cause disease. It is widely acknowledged that the white blood cells in the mother's milk reduce the effect of *E. coli* poisoning.

Unnaturally high protein feeds also add to the problem.

There are many strains of *E. coli* and these may cause disease in young pigs in several ways, for example producing a poison called enterotoxin (Enterotoxigenic *E. coli* or ETEC) which directly invades a small intestine or respiratory tract and causes septicaemia.

Newly born piglets may die within 48 hours from *E. coli* septicaemia and diarrhoea. Outbreaks occur in farrowing sheds where litter after litter can be affected. Of all the diseases in the suckling piglet, diarrhoea is the most common.

*E. coli* in newly born piglets is caused by factory farm conditions where mothers are moved into filthy farrowing crates to give birth and suckle their young. The crates are metal barred, stopping the mother sow from being able to walk or even turn around – she therefore has no opportunity of escaping the contaminated excreta.

Pathogenic *E. coli* also harms newly weaned piglets. Early weaning puts piglets under enormous stress. Post-weaning enteritis or post-weaning diarrhoea occurs within 10 days of weaning.

## Lameness

Lameness is a major disease of factory farmed pigs. Although lameness can be caused by congenital or developmental abnormalities, most lameness in farmed animals is caused by pain associated with infections, trauma-related injuries, or underlying metabolic diseases. The most common limb lesions in weaners, finishers and sows are calluses, swellings, wounds, external abscesses and bursitis. Stress and ill-health can also lead to lameness. Trauma is by far the most common cause of lameness in the dry sow, from point of weaning to point of farrowing. Environmental trauma to the coronary band area and to the sole or wall of the foot results in penetration of the sensitive tissues, infection and lameness. These foot conditions are called 'bush foot' and 'foot rot' (82).

## PIG FARMING: THE INSIDE STORY

Lameness is the third most common cause for treatment with antibiotics in weaner and finishing pigs.

Housing type is one of the major factors influencing lameness on commercial pig farms. It influences the amount and type of movements pigs can make. Individual housing in gestation stalls contributes to lameness via reduced bone strength and muscle mass, and joint damage due to lack of exercise.

Flooring type can be a major influencing factor on lameness and claw health as the pig has continual contact with the floor surface.

Osteochondrosis is a painful and debilitating leg disorder that causes lameness in pigs. It is attributed to pigs being forced to grow too fast and being housed on hard, slatted floors. Cracks and crevices arise in the cartilage layer at the hock, elbow, shoulder and hip joints.

An ideal floor for pigs should be soft, clean, not slippery and not abrasive; the surface should be even and without sharp edges. In the majority of pig units, slatted concrete floors are used and such floors increase the risk of lameness. Slatted floors present some disadvantages to the animals, such as an uneven walking surface and the lack of bedding.

Foot rot is exacerbated by the urine soaked, unhygienic conditions in which many pigs live. The lesion of the foot is invaded by bacteria, causing it to go septic. The area is often ulcerated and very painful for the animals.

If abscesses develop, the leg is held off the ground. Secondary abscesses may form in other areas, for example the brain, liver or spleen.

Lameness is also caused by overgrown claws (caused by housing pigs on muddy ground with little opportunity to exercise); laminitis (in boars and heavily pregnant sows), and erosive foot lesions.

Lame pigs have very poor welfare because they are in pain, suffer discomfort, are at a disadvantage when it comes to competing for resources, are more susceptible to other diseases and consequentially they fail to thrive/reproduce. The considerable impact of lameness on pig welfare is too often overlooked on pig units. Often with lame sows, the only 'treatment' is to cull her after production of the litter.

Animal production expert, Lean, states (45):

*"Sows kept in close confinement and/or on slats may become so lame and in obvious pain that there may be no other recourse but to send them to slaughter, assuming they are still able to walk".*

### Swine Dysentery

Swine dysentery is a mucohaemorrhagic disease of pigs that affects the large intestine (83). This infectious disease is typified by mucus and blood laden diarrhoea along with a loss of condition. The first signs are partial anorexia, passage of soft faeces, and possibly fever. Commonly, pigs become diarrhoeic, dehydrated, and



Inappropriate slatted flooring can cause widespread lameness in pigs. Current UK legislation and Quality Assurance schemes such as Red Tractor allow fully slatted flooring in finishing units. This pig was filmed in 2015 by Viva!

Photo © Viva!

are profoundly weak, gaunt and emaciated. They may have sunken eyes and protruding ribs and backbones. It is transmitted to healthy pigs by infected faeces.

## Meningitis

Streptococcal meningitis is an epidemic disease that occurs across all countries with pig factory farms. It is a relatively common disease of young pigs whereby infection leads to inflammation of the sacs that surround the brain (meninges) and produces disturbance to the nervous system. The disease is frequently fatal and can result in the sudden death of pigs who appear to be in good bodily condition. If the pig is found alive with the disease, he/she may show signs of incoordination, tremor, paralysis and spasms before dying within four hours of showing these symptoms. The disease is most common in three to 12 week old piglets, but is not uncommon in pigs up to six months. Bronchopneumonia is increasingly being identified with the disease. Once infected, the organism is rarely lost from the herd.

Meningitis infection is spread by pig to pig contact.

Overcrowding, poor ventilation, stress and mixing of pigs from different litters are factors that assist the bug to infect units (84, 85). Evidently, these occur on factory farms.

## Glässer's Disease

Glässer's Disease is an infectious disease caused by the bacteria *Haemophilus parasuis*. It is ubiquitous and occurs in pigs worldwide.

Pigs with Glässer's Disease become rapidly depressed, with an elevated temperature, stop eating and are reluctant to rise. *Haemophilus parasuis* attacks the smooth surfaces of the joints, coverings of the intestine, lungs, heart and brain. In young growing pigs, meningitis or middle ear infections are common together with pneumonia, heart sac infection, peritonitis and pleurisy.

*Haemophilus parasuis* also causes individual cases of arthritis and lameness with acute pain and fever. It is respiratory spread and a characteristic feature is a short cough of only two to three episodes. Sudden death in good suckling piglets is not uncommon in herds with a problem and, in particular, when immunity in gilt litters is low.

Suckling piglets are often pale and poor growing. The disease can be fatal for early weaned pigs, and they are most susceptible around three to six weeks old,

although older pigs do succumb. The piglets may have a sudden fever, anorexia, and breathing difficulties. Animals become arthritic and lame – all joints being painful and swollen. The face may swell and there can be severe nasal discharge and coughing. Piglets may die within two to five days, and the skin may be discoloured red or blue.

Those animals who do survive may develop heart failure, meningitis or chronic arthritis.

The disease is spread by contact or aerosol.

## Post-Weaning Multisystemic Wasting Syndrome (PMWS) and Porcine Dermatitis and Nephropathy Syndrome (PDNS)

Post-Weaning Multisystemic Wasting Syndrome (PMWS) has become of significance and considerable concern in many parts of the world, particularly Canada, the United States and Europe. It tends to be a slow and progressive disease with a high fatality rate in affected pigs. The main symptoms of PMWS are weight loss and laboured breathing in weaner pigs, usually around six to eight weeks old. The pigs may also suffer scours, anaemia and jaundice. Weaned pigs lose weight and gradually become emaciated. Their hair becomes rough, and their skins pale and sometimes jaundiced. Death is sudden.

Porcine Dermatitis and Nephropathy Syndrome (PDNS), on the other hand, occurs mainly in 'growers' and 'finishing' pigs. PDNS is characterised clinically by acute onset of skin lesions (raised purple skin lesions progressing to multifocal raised red scabs with black centres most prominent on the rear legs), fever, depression and lethargy. The majority of pigs that develop extensive skin blotching die (86). Clinical signs may occur within a few pigs in a herd sporadically, and the disease may then go undiagnosed, or they may occur in a bigger proportion of pigs. Filthy pens and feed containers spread the disease, as does crowding and mixing animals from different farms (86).

PDNS is combining with PMWS and killing more pigs than ever before.

## Classical Swine Fever (CSF)

Classical Swine Fever (CSF) is a highly contagious viral disease, caused by an RNA-type of Pestivirus. CSF was eradicated from Britain in 1966, with occasional outbreaks being contained and eradicated. The last outbreak occurred in the country during 2000 (87).

## PIG FARMING: THE INSIDE STORY

Although the EU is officially clear of CSF, outbreaks have occurred in many countries elsewhere. When CSF first enters a herd, it can spread very rapidly. It is primarily spread by both direct and indirect (e.g. vehicles, equipment, bedding, feed, waste, humans) contact with infected pigs.

CSF can survive in meat and pig products for many months. In frozen pork products, at least four years and, in pickled or smoked meat, for three to six months.

Within an infected herd, a high proportion of pigs may become ill with a high fever, and many of them die. The clinical signs of CSF are similar to African Swine Fever. CSF makes animals feverish, dull, feel exhausted and exhibit a lack of appetite. This is followed by conjunctivitis, which causes the eyes to stick together, constipation, then diarrhoea and vomiting. The skin may redden and there may be widespread haemorrhaging. Pigs convulse early in the disease, and

this is followed by a lack of coordination and circling. The animals die in 9 to 19 days in acute cases, and 30 to 95 days in chronic cases. It is a disease that causes a lot of suffering for pigs, yet again this is rarely mentioned in media reports.

CSF is transmitted by pigs eating contaminated feed, litter, or through broken skin. The virus exists in faeces and urine. In factory farms, animals are forced to lie in both.

CSF is controlled by a kill-all policy. Pigs in contact with the diseased animals are slaughtered and buried or burned. They are killed, rather than treated, for economic reasons (CSF does not infect people), so that Britain can continue to export pigs and pig meat. As usual, the tax payer compensates the farmers. In the 2000 outbreak, farmers received 50 per cent of the market value for infected animals, and 100 per cent for uninfected animals (88).



# 7. SWINE FLU

Swine flu is the popular name for influenza (flu) caused by a relatively new strain of influenza virus A (89). Swine flu affects pigs. It was responsible for the flu pandemic in 2009 and 2010 when the virus jumped from animals into people, and then spread rapidly around the world. It spread rapidly from country to country because it was a new type of flu virus then that few people were immune to. Since then it has joined the pantheon of other types of flu that lead to outbreaks every winter. In February 2016, over seven days, 31 outbreaks of swine flu were reported in Britain – including eight in hospitals. It was also reported that three wards of Leicester’s Royal Infirmary closed after 14 cancer patients were diagnosed with swine flu (90). In 2016, deaths have also been reported in countries such as the West Indies – Jamaica has recorded

its fourth swine flu-related death in three weeks (91, 92), Mexico (93), India (94), and Northern Ireland (95).

Flu viruses commonly infect pigs and pig herds, and can result in high rates of illness among pigs, but there are few deaths.

Signs of influenza in pigs include (96):

- Coughing (“barking”)
- Sneezing
- High fevers
- Breathing difficulties
- Discharge from the nose
- Going off feed



# 8. FOOT AND MOUTH DISEASE

Foot and mouth is a highly contagious and nasty viral disease. However, whilst it infects most animals in a herd, it actually kills only a small percentage.

It is caused by an aphthovirus which can survive in pickled meats for one to two months, and parma ham for three to five months. It is not always killed by pasteurisation and it may be in dried milk for years.

Foot and mouth's tell-tale symptom is sudden lameness, the feet being very painful. A pig's back may arch and the animal becomes unwilling to move. Blistering occurs on the nose, tongue, lips and feet, hence the name foot and mouth.

The high concentration of virus produced in the early stages of the disease, before symptoms show, coupled with the large number of pigs crowded together and forced ventilation in factory farms, gives rise to large viral plumes which can travel by air for long distances. The virus may then infect other pigs and cloven-hoofed species, such as cattle, sheep, goats and deer.

The virus is also spread by infected animals touching healthy animals, by manure on lorries, markets and farms, or carried on clothing. Milk may also be a source of infection.

Pigs do not remain carriers of the disease, and are free from the virus 28 days after infection. Many question, therefore, why the animals infected with foot and mouth are killed at all.



Undercover footage taken by Viva! shows yet another piglet lying dead in a walkway

Photo © Viva!

## THE UK OUTBREAK OF FOOT AND MOUTH

In February 2001, panic swept over the nation's farmers as the first outbreak of foot and mouth disease was announced for 20 years. So much so that the General Election was postponed for a month (97). A staggering 10 million animals are thought to have been killed during the foot and mouth outbreak, between the first case on 20 February and the last case detected on 30 September. This was more than twice as high as official government figures (98).

### Burnside Farm, Heddon-on-the-Wall

It was reported in the media that the source of the outbreak may have been infected meat fed in swill to pigs at Burnside Farm, Heddon-on-the-wall in Northumberland (99, 100). The farmer at this facility, Bobby Waugh, failed to report a problem and the outbreak was first identified in Essex, at Cheale Meats at Little Warley, where his animals were sent to slaughter.

The government's Chief Veterinarian stated at the time (101):

*"This is a notifiable disease, yet this farm did not notify anyone. From the experts that have looked at the ill animals, it is quite clear they have been showing signs of clinical disease for two weeks, the blisters have already broken and healed. With incubation this disease could have been present for 28 days, much longer, and a far worse situation than we thought at the beginning of the week".*

Vets declared that Waugh's farm was the perfect breeding ground for foot and mouth: (102)

*"Rotting pig carcasses had been left with live pigs. Pieces of raw meat were left lying about the farm. The sows gave birth among other pigs and grown pigs were eating piglets".*

Viva!'s footage shows similar obscenities in other pig units across Britain. At most farms, dead pigs were either left with cell mates, strewn in gangways with rats running around, in containers filled with thousands of





maggots, or in various stages of decomposition in open pits. Sows have been filmed giving birth into faeces; mother sows covered in flies with dead piglets by their side; a mother sow haemorrhaging into the gangway which was filled with blood; and dirty yards and filthy sheds that had not been cleaned in years.

In 2002, Waugh was found guilty of nine animal health and cruelty charges, including two counts of causing unnecessary suffering to pigs. During the trial the judge was shown a video which depicted some of Waugh's 527 pigs huddled together – some of them lying twitching on the floor. The prosecution said the farmer should have spotted symptoms of the disease in his animals (103). It was also claimed he routinely fed his stock untreated catering waste from local schools and restaurants.

In 2003, it was reported in the media that Waugh had paid only £60 of the £10,000 legal costs imposed on him in June 2002 when he was convicted (104). He was also banned from keeping animals for 15 years. The animals on his farm were clearly not being regularly checked properly, yet by law, farmers are supposed to check the animals daily. And yet the Ministry of Agriculture, Fisheries and Food (MAFF), which later

became part of Defra, had visited the farm only one month before the outbreak and given it a clean bill of health. Viva! is not surprised by this as Defra frequently takes no action on the back of serious farmed animal welfare complaints.

It is clear that a combination of animal neglect, poor regulation relating to the transportation of farmed animals, and the disease-friendly environment of the market system all contributed to the rapid spread of foot and mouth disease.

The disease spread from that first farm to a nearby farm, probably by wind. From there, 40 sheep were among the 3,500 sold at Hexham Market. The buyer shipped the sheep to a holding centre in Carlisle, and from there the animals were transported to a farm in Devon. Some sheep from this farm were sent to a slaughterhouse in Wiltshire, where they developed foot and mouth. Other sheep were sold to a farm in Herefordshire and an auction in Northampton. Three hundred and forty eight more sheep from the same farms were sent overseas to Germany via Dover. Many thousands of UK-raised sheep were consequentially slaughtered in countries such as Germany, France and Spain.

## PIG FARMING: THE INSIDE STORY

The spread of this disease has highlighted well the fact that live farmed animals are subjected to transport over hundreds of miles within the UK, and for thousands of miles outside of it. All part of industrialised agriculture. Despite the fact that most people in Britain want live exports banned – the trade in misery continues unabated. So long as it does, diseases will be transmitted freely and quickly across the globe.

The policy to control foot and mouth is slaughter-all. During the major outbreak across the UK, dead bodies were piled onto huge bonfires which took several days to burn, or they were buried in mass graves. The British army was drafted in, and their involvement in the rapid killing meant animals may well have been buried alive. In fact, it was reported that animals were shot with stun guns, and thus recovered consciousness before dying on piles of others bodies. Animals were drenched with disinfectant whilst still alive. Baby animals unable to be shot in the skull with captive bolts were injected directly into the heart. A more recent outbreak in South Korea in 2011 led to 1.4 million pigs being buried alive in mass graves (105).

This gruesome mass slaughter-all policy was purely for commercial reasons. There are nastier diseases than foot and mouth running rife through industrial pig farms, yet there is no national outcry. This, Viva! holds, is because the animals are left to suffer and die on farms. Behind closed doors. There are no exports affected.

It is important to remember that all the breeding 'stock' that farmers weep over losing over diseases such as foot and mouth are destined for the slaughterhouse. When their breeding output drops below an 'efficient' level, sows (and other animals) are sold for low-grade meat products. The intensive farmer's tears are over feared economic loss, rather than any concern for animal welfare.

Of course the National Farmers Union (NFU) fully backs the slaughter policy, as do the farmers. It aims to preserve the myth of cheap food, and to protect an elite of large-scale farmers. Smaller farmers also have no incentive to keep the animals alive. Their profit margins are low, and they do not want thinner and less-productive animals. Not when they receive compensation from the taxpayer.

There have been vaccines available for over 50 years; however, because there are around 80 strains of foot and mouth, they are only partially effective. In fact, the

only way of eradicating these diseases is by ending factory farming, live exports and slaughter.

Rather than the immense animal suffering and loss of life, the media predictably focused on the financial loss to farmers, and the 'foot and mouth millionaires' who sprung up on the back of the outbreak. It was reported that £8.3 million of British taxpayer's money was handed out to three farmers during the foot-and-mouth crisis (106). Yet the farmer who received the largest payout, said to be £4 million, was reported to have 'cried his eyes out' after watching his cows and sheep – who were destined for the slaughterhouse – killed (107).



## 9. DRUGS

Pigs account for the majority (approximately 60 per cent) of farm antibiotic use in the UK (108). The Veterinary Medicines Directorate shows that in 2010, an estimated 211 tonnes were sold for use in pigs, 138 tonnes for poultry, 11 tonnes for cattle, one tonne in fish and less than 0.5 tonnes were sold for use in sheep.

Antibiotics are used in farmed animals for three reasons: to promote growth; to treat disease (therapeutic use), and to prevent disease (prophylactic use).

An EU-wide ban on the use of antibiotics as growth promoters in animal feed came into effect on January 1, 2006 (109). On the surface this sounds a positive move; however, antibiotic use remains high.

Intensive farms make ideal breeding grounds for bugs. However, factory farmed pigs are routinely fed antibiotics, even when they are healthy. The high stocking density, the stress of factory farming on animals and the low level of genetic diversity all increase the potential for the spread of diseases amongst animals. To stop the spread of diseases,

Use of antibiotic per animal for pigs, 2007 to 2010 (grammes of active ingredient per animal per year)

2007	41.2
2008	38
2009	41.2
2010	47.3

Source: Soil Association (108)

factory farms usually use high levels of antibiotics, often to prevent disease rather than cure existing conditions.

However, it is widely known that pigs are fed antibiotics to make them grow more quickly. Though growth promoting antibiotics have been banned, more are simply used but under the label of disease prevention.

The use of antibiotics to increase the growth of pigs is most studied of all livestock. This use for growth rather than disease prevention is referred to as sub-therapeutic antibiotic use. Studies have shown that administering low doses of antibiotics in livestock feed improves growth rate, reduces mortality and morbidity, and improves reproductive

## PIG FARMING: THE INSIDE STORY

performance. Although it is still not completely understood why and how antibiotics increase the growth rate of pigs, possibilities include metabolic effects, disease control effects, and nutritional effects (110).

The large amount of antibiotics used in factory farming is a significant cause of the resistance of many common pathogens to the antibiotics used to treat infections in humans.

There are detailed reports on why antibiotic use in farmed animals is causing a threat to human health (108, 111, 112, 113).

According to the Alliance to Save our Antibiotics, the overall weight of scientific research has led to a consensus (114) that:

- for some bacterial infections, such as *Campylobacter* and *Salmonella*, farm antibiotic use is the principal cause of resistance in human infections.
- for other infections, like *E. coli* and enterococcal infections, farm antibiotic use contributes, or has contributed, significantly to the human resistance problem.
- the emergence of resistance to critically important antibiotics, in particular of ESBL resistance in *E. coli* and *Salmonella*, is a major development which has occurred in recent years and has been driven by inappropriate use of these antibiotics in both human and veterinary medicine.
- livestock-associated strains of MRSA infecting humans are also a developing problem, which results from the high use of certain antibiotics in farmed animals.
- some other emerging antibiotic resistant infections in humans may be, in part, due to farm antibiotic use, but while research is ongoing, there is currently insufficient evidence to draw clear conclusions.

The lack of major success over past decades in developing new antibiotics means that it has become ever more important that we preserve the antibiotics that we have by using them only when they are genuinely needed in order to reduce overall use.

On many highly intensive pig (and chicken) farms, the approach is to increase hygiene and 'biosecurity' to reduce the spread of disease. However, the widespread use of some disinfectants can also select for antibiotic-resistant bacteria.



Antibiotics are administered as standard on factory farms

Photo © Viva!

A main concern is that agricultural antibiotic use is driving up levels of antibiotic resistance, leading to new "superbugs". Most public health experts agree that resistant bacteria are created in 'food' animals by antibiotic use and that some of these are being transmitted to people and one of the major concerns to emerge in connection with such over-use is new *E. coli* and MRSA superbugs on farms (108).

In December 2015, it was reported that 12 people had been treated for infections linked to virulent strains of salmonella and *E. coli* carrying a deadly resistance gene (115). In November 2015, scientists sounded the alarm over the dangers of global epidemics caused by infections that doctors would not be able to treat. The warning followed the discovery of a superbug version of *E. coli* on pig farms in China. It contained the MCR-1 resistance gene that disables the last-line antibiotic colistin, which would normally be used to treat humans after all other drugs have failed. Now this same resistance gene – MCR-1 – has been found in bacteria in people, farmed animals and meat in Britain (116). There is an urgent ongoing review into the alarming discovery, which demonstrates that superbugs are a clear and present danger for British families.

A 2015 report, which was part of an ongoing review of antimicrobial resistance (AMR), produced by an independent body chaired by a British economist, stated that farmers must dramatically cut the amount of antibiotics used in agriculture, because of the threat to human health (113). The report also revealed that 72 per cent or 100 of 139 academic papers found evidence of a link between antibiotic consumption in animals and resistance in humans. Only seven (5 per cent) argued that there was no link between antibiotic consumption in animals and resistance in humans. The review also showed that a considerable amount of

antibiotics are used in healthy animals to prevent infection or speed up their growth in confined conditions (113).

For some bacterial infections, such as *Campylobacter* and *Salmonella*, farm antibiotic use is the principal cause of resistance in human infections (117). For other infections, like *E. coli* and enterococcal infections, farm antibiotic use contributes, or has contributed, significantly to the human resistance problem (117). The emergence of resistance to critically important antibiotics, in particular of ESBL resistance in *E. coli* and *Salmonella*, is a major development which has occurred in recent years and has been driven by inappropriate use of these antibiotics in both human and veterinary medicine (117).

Bacteria that produce enzymes called extended-spectrum beta-lactamases (ESBLs) are resistant to many penicillin and cephalosporin antibiotics and often to other types of antibiotics. The two main bacteria that produce ESBLs are *E. coli* and *Klebsiella* species. *E. coli* with ESBLs may cause urinary tract infections (UTIs) that can sometimes progress to more serious infections like blood poisoning, which can be life threatening. Resistance makes these infections more difficult to treat.

Farmed animals, particularly pigs, are a reservoir for powerful new bacteria which are a threat to human health, suggests a Government study (118).

Any humans infected through food or contaminated water with these bugs – new strains of *E. coli* and *campylobacter* – are at serious risk (118). As a result, a whole raft of drugs will no longer be useful in treating conditions including TB, other lung infections and food-poisoning (118).

Antibiotic Research UK's Director says the chances of salvaging the most important drugs are 50-50 after resistant bacteria were found in pigs and humans in England and Wales (119). It is "almost too late" to stop a global superbug crisis caused by the misuse of antibiotics, a leading expert has warned. He also stated that said efforts to find new antibiotics are "totally failing" despite significant investment and research. It comes after a gene was discovered which makes infectious bacteria resistant to the last line of antibiotic defence, colistin (polymyxins) (119).

The resistance to the colistin antibiotic is considered to be a "major step" towards completely untreatable infections and has been found in pigs and humans in

England and Wales. Resistance is thought to have grown due to colistin being heavily used in pockets of the agricultural industries, particularly in China, often to increase the physical size of livestock (119).

In the UK, nearly half of all antibiotics used are in farming (119); and worldwide the figure is the same (120, 121). The unnecessary prescription and use of antibiotics as a form of treatment is also believed to be an aggravating factor.

The overuse of antibiotics props up factory farming systems in which animals are at a greater risk of illness due to close confinement, early weaning and stress. The underlying reason for food-animal-related antibiotic resistance is the dependence on antibiotics of this type of intensive farming. Animals not in need of treatment are nevertheless dosed with antibiotics to compensate for the suppression of their immune systems – brought on by overcrowding, early weaning, high stress and other aspects of the unnatural production systems in which they are reared. And the desire to force the growth of the animals – to get them to slaughter as quickly as possible, fuels massive antibiotic overuse.

## **DISEASES IN PIGS WHERE DRUGS ARE COMMONLY USED**

Treatment may be given to sows for metritis, mastitis and for diseases such as erysipelas and leptospirosis. In most indoor herds antibiotic treatment starts soon after birth. Piglets will receive drugs for enteritis and for respiratory disease. From weaning (usually three weeks) all piglets are gathered, mixed and then reared to finishing weights. Weaners usually develop post weaning diarrhoea caused by *E. coli* which occurs on day three post weaning.

Post-weaning diarrhoea is quickly followed by a range of other diseases. Glässer's Disease (*Haemophilus parasuis*) occurs at four weeks, pleuropneumonia at six to eight weeks, proliferative enteropathy from six weeks and spirochaetal diarrhoea and colitis at any time from six weeks onwards.

At eight weeks the pigs are termed growers and moved to another house. Here they will develop enzootic pneumonia, streptococcal meningitis (*Streptococcus suis*) and, possibly, swine dysentery. Respiratory disease may cause problems until slaughter. Quite an indictment of factory farming!

## PIG FARMING: THE INSIDE STORY

Despite around £30 billion being poured into European agriculture each year, the pig farming industry has proclaimed itself to be in several crisis situations

# 10. THE PIG INDUSTRY 'CRISIS'

Despite around £30 billion being poured into European agriculture each year, the pig farming industry has proclaimed itself to be in several crisis situations. Despite the fact that farming accounts for less than 2 per cent of the EU's output (GDP), it attracts incredible subsidy. Without it, red meat would be so expensive that consumption would collapse; even with it, the industry is staggering. This monumental sum is topped up even further by our Government with special payments to 'needy cases'.

In 1998, pig farmers warned of 'desperate times', and it was reported that pig producers were losing £6m each week largely because they 'had to produce pork to a higher standard than their competitors overseas' (122). Farmers and abattoir owners complained that it was due to competition in an over-supplied market. These cries of poverty tied in with the 1999 ban on keeping pigs in stalls or on tethers, and farmers blamed the ban on this 'crisis'.

The Meat and Livestock Commission (MLC) waded in and gave an additional £3 million to the pig industry to help market its products and stave off collapse. By February 1999, Farming News stated that despite this,

the market for pig meat had collapsed to an all-time low. According to the MLC, losses for the nine months to January 1999 topped £150 million.

Further statements of 'collapse' have come more recently. In 2011 it was reported that two thirds of British pig farms could be on the brink of collapse within two years because of the price of wheat and other staple crops to feed pigs (123). In 2012, it was stated that high feed costs caused by global wheat and soya shortages had forced many farms to close. Supermarkets also apparently do not 'pay enough' to pig farmers. This pattern is mirrored across Europe, and countries within the EU are apparently facing the same crisis as the UK. In 2015, French farmers burned tyres, hay and manure as they blocked the highway in protest against European Union food import laws and poor deals with distributors (124). They also released live pigs in supermarkets (125). Farmers complained they pay too many charges which makes their pork more expensive than other big European Union producers, like Germany and Spain. Experts stated that the French pork industry has been struggling for years due to major structural challenges (126). In 2016, again agriculture experts warn that Britain's pig farmers are

braced for a crisis thanks in part to a Russian export ban which started early in 2015 due to several outbreaks of African swine fever (ASF) in Eastern Europe (127), and made prices plummet as it had a knock on effect for British farmers, even if they were not exporting to the country (128).

EU pork exporters were apparently experiencing immense difficulty after losing export trade to Russia, which was believed to be worth around €5.5 billion annually. Since the export ban, the price of pork fell by up to 10 per cent for eight weeks, and the Russian pig export ban created a negative spiral on the pork market (129). In November 2015, the EU pig market was described as 'critical' by EU farming body Copa-Cogeca, and apparently in crisis yet again. EU Ministers gathered to debate the €500 million package given to 'struggling' farmers in September 2015, which Copa described as insignificant (129). UK farmers were set to receive just over €36 million, about £26.4 million (130).

The aid package followed a mass protest where 5,000 to 6,000 farmers from across Europe descended on Brussels in September 2015 to vent their anger at the ongoing downturn in farmgate price (131). About 70 British farmers, led by the UK farming unions, travelled to the city to play their part in a demonstration (131).

There have been many reasons given by farmers for the 'collapse' in pig farming. In the short term, falling global soya, maize and wheat harvests – all sources of pig feed – have driven up the costs involved with pig rearing. Also that pig farmers continue to be squeezed by supermarket profit margins.

The constant cry of farmers is, of course, that they have the 'best welfare standards in the world', and this is costing them dear. They're now attempting to save their bacon by launching consumer campaigns with the message that pigs are in paradise on Britain's factory farms, for example the Red Tractor's 'Love Pork' campaign (132) which was rolled out around the UK on billboards and a national press ad. This 'Pork Not Porkies' ad campaign however was banned by the Advertising Standards Authority (ASA) in 2012 after complaints that the adverts were misleading and unsubstantiated (133).

The body behind the campaign, the Agriculture and Horticulture Development Board, told the ASA that Red Tractor pork was "*high welfare compared to pork from other EU exporting countries*", but that EU legislation prevented it from making a direct comparison with

imported pork. The problem for the ASA was that the ad implied the UK had high welfare, while it understood "*some aspects of pig farming in the UK, such as farrowing crates, tail-docking, tooth clipping and slatted floor accommodation, while better than in some EU exporting countries, were still contentious issues*".

Perhaps the most abhorrent reason given by farmers for these collapses is the ban of sow stalls.

The European Commission responded in 2011 by providing financial aid for pig farmers. It was reported that the EU pig sector is in crisis, with market prices 10 per cent below 2009 levels, not sufficient to cover rising feed costs, resulting in losses of €25 per pig, according to EU farming body Copa-Cogeca (134). Continual warnings from the National Pig Association (NPA) that by next year many supermarket shelves will be bare of British pork have continued to be unheeded however. Exports of pig meat from Britain also continue to rise, despite the current so-called 'crisis'.

The NPA ran a 'Save Our Bacon' campaign, encouraging consumers to support the 'Red Tractor Logo' assurance scheme.

It is impossible to understand how animal farming has managed to secure such preferential treatment when it is so damaging – to health, the environment and, of course, the animals themselves. Entire industries have been devastated in the name of axing subsidies, particularly mining, steel and ship building – but not animal farming and the intensively grown fodder.

The crisis facing animal farming is not short-term, but a sign of increasing problems. Viva!'s answer is to end intensive farming and to encourage the public to stop eating animals. Instead, we need to encourage and support horticulture – where plant crops of all kinds are grown and fed directly to people. This is much more sustainable for planet Earth – involving, for example, less use of water and land, less loss of biodiversity, less output of global warming gases and, of course, involves no animal cruelty. Humans thrive on a varied, wholefood vegan diet – suffering from less chronic diseases and thus a widespread shift to vegan diet would lift the burden from our collapsing NHS.

However, the pig farming industry aims to continue down the road of intensification; further manipulating animals to make them grow larger, with low fat, in the shortest time possible in conditions which are completely abhorrent.

# 11. PIG MEAT STANDARD SCHEMES

The vast majority of pigs reared for meat are indoor farmed, yet much vaunted assurance schemes have been developed to entice consumers to buy British-reared pig meat. These assurance schemes are supposed to guarantee higher welfare, hygiene and standards, yet Viva! has regularly exposed the dire conditions on pig units approved by them. The Red Tractor scheme, for example, which is the largest food scheme in Britain, has been joined by tens of thousands of 'livestock' farmers, yet they have had to do nothing of substance. Despite this, they can boast that their animals are 'assured'. If their standards slipped there would be no warning letters, no prosecutions and no fines – just a few words.

## **RSPCA ASSURED (PREVIOUSLY FREEDOM FOOD)**

In 2015, Freedom Food, the RSPCA's farm animal welfare assurance and labelling scheme with five famous freedoms at its heart – freedom from hunger and thirst; discomfort; pain, injury or disease; fear and distress; and the freedom to express normal behaviour – was rebranded for the consumer market as 'RSPCA Assured'.

The label 'Freedom Food' in particular attracted much criticism as it implied all the animals under the scheme were 'free' or 'free range' which certainly was not true.

The scheme approved and still approves indoor and intensively reared animals.

The RSPCA responded to criticism by saying the five freedoms were 'ideals' or 'aspirations', rather than a guarantee of how the animals were treated under their assurance scheme.

Today, the animals carrying the RSPCA Assured label are not necessarily free-range. In fact, much of the pig meat approved by the RSPCA comes from animals housed in indoor intensive systems. Whilst the RSPCA scheme has improved its welfare requirements – in particular, it no longer allows the use of the farrowing crate – important behaviours such as rooting are denied in indoor units (and nose rings are permitted to stop it outdoors); the same dry or liquid feeds are given; babies are taken away before they're naturally weaned, mutilations are permitted (eg tail docking in indoor units, teeth clipping) and what some find most disappointing is that the space requirements per growing pig are so small – almost the same as government guidelines, a far cry from 'free', 'high welfare', 'ability to express normal behaviour', 'freedom from distress or discomfort' and so forth.

This, not surprisingly, comes as a shock to those consumers who want to trust the RSPCA to only approve non-intensive outdoor production.

Some examples of what is allowed on RSPCA Assured farms are below:

### **Weaning age**

RSPCA: 'No piglets can be weaned from the sow before 28 days of age'. However, the RSPCA then go on to say that 21 days is accepted (see below):

The Assured scheme approves farms which wean at just three to four weeks of age. Three weeks so long as 'the weaned piglets are moved into specialised housing that is emptied, cleaned... and separated from the sows...' This is the same low welfare standards that Defra give and slightly less strict than the industry scheme, Red Tractor, which stipulates 28 days. Naturally, pigs would be weaned at about 12 weeks of age (but would not leave their mothers until much older, if at all – see About Pigs/Social Beings section), and parting them





from their mothers this early makes them extremely vulnerable to disease; leads to the overuse of antibiotics and other medicines; and causes trauma to both mother and piglets. Presumably the RSPCA chose three to four weeks because most intensive production systems wean piglets at three to four weeks of age (so they can make the sow pregnant again as soon as possible).

The RSPCA even admit that ‘the earlier the weaning age .. the greater the chance of them suffering from welfare problems’ in their Welfare Standards, yet rather than stipulating that farmers must wean later, they state ‘therefore a more careful system is required with respect to management’.

### Space for growing pigs

RSPCA: ‘The minimum space allowances for growing pigs are as follows:

Live weight (kg)	Lying area (m <sup>2</sup> )	Total area (m <sup>2</sup> )
10	0.10	0.15
100	0.50	0.75

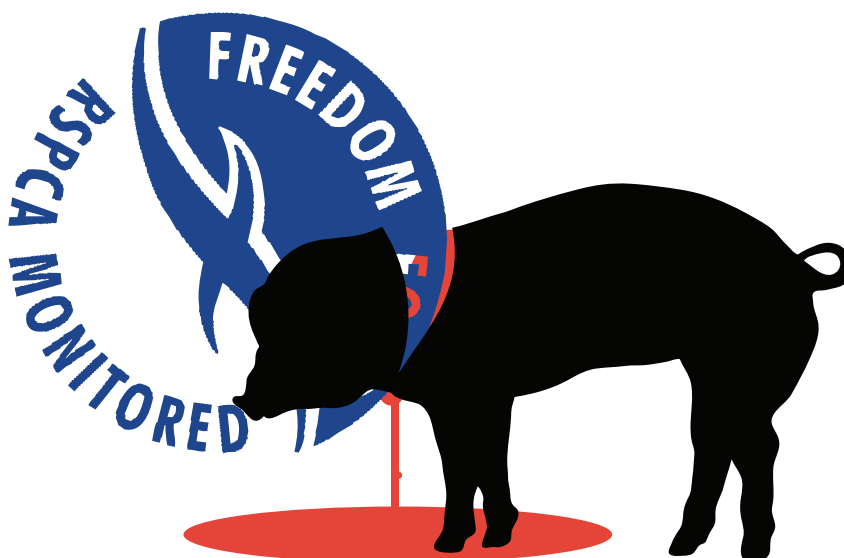
These standard sizes have changed very little since at least the year 2000. They are very close to the minimum permitted space allowances outlined in Defra’s Code of Recommendations for the Welfare of Livestock 2003 (62). This is a disgrace by the RSPCA.

In our view, this means that the RSPCA approves of overcrowded (yet not illegal) conditions. In essence, pigs have enough space to lie down and a fraction more for their life.

Mature dry sows’ minimum requirement for space is 3.5m<sup>2</sup>. Pregnant animals spend their lives with space and little to keep them occupied.

### Farrowing

In December 2015, new RSPCA Welfare Standards in relation to farrowing (and indoor free farrowing in particular) were introduced. The use of farrowing crates is now prohibited by the RSPCA. How incredible that until recently they approved of crates. Currently, guidelines are sparse on indoor farrowing, the guidelines state that the sow must be able to turn around and be provided with straw for bedding and a nesting material.



### Tail docking

RSPCA: ‘Tail docking is not permitted except in exceptional circumstances’ .

Again the RSPCA compromises welfare principles in order to support a common intensive farming practice. The RSPCA, instead of allowing cruel procedures that are against their principles, should set much higher welfare standards which would eliminate tail biting and therefore the ‘need’ to tail dock. Defra also state that tail docking should not be routine but this is routinely ignored!

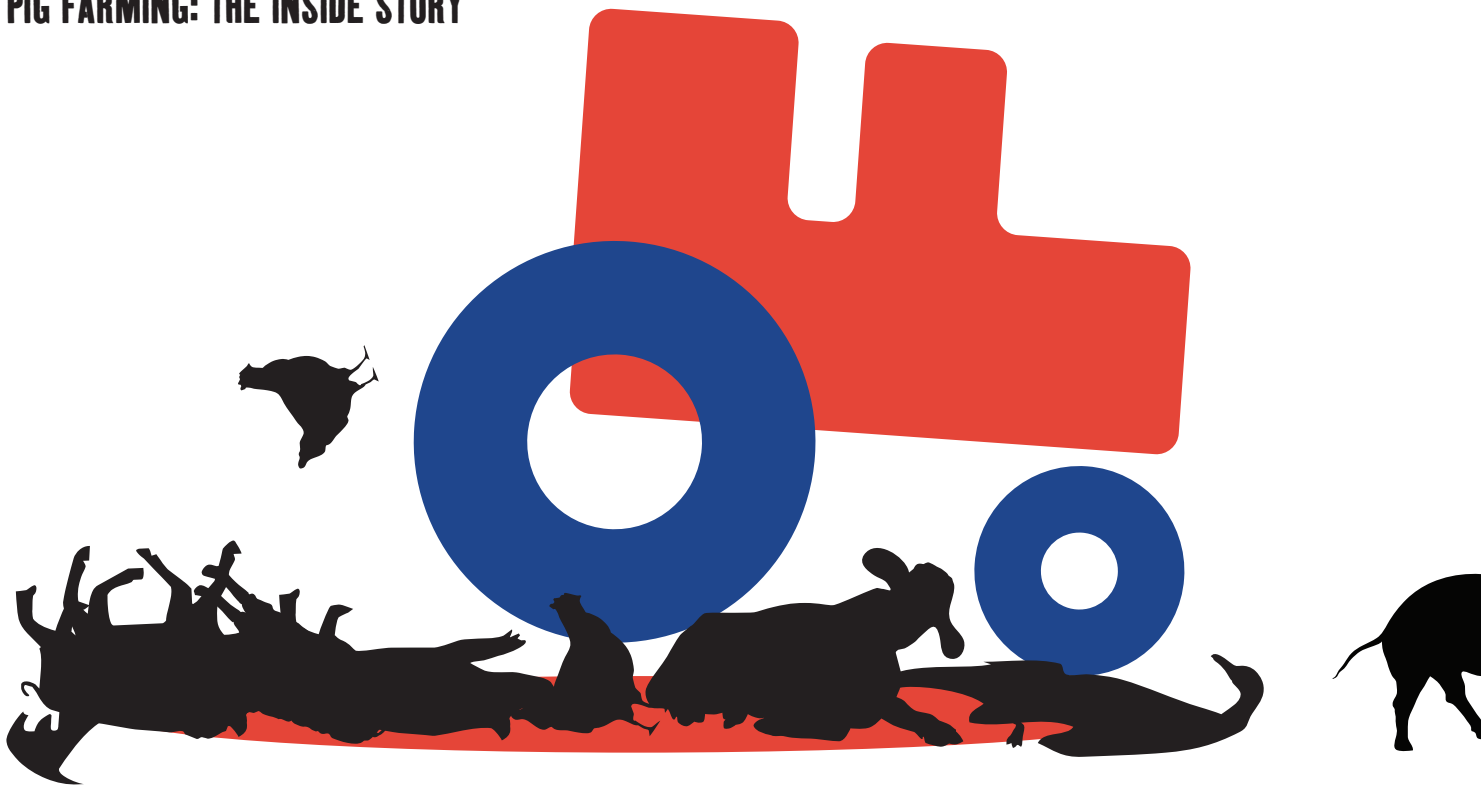
### Teeth clipping

The RSPCA also allows teeth clipping, though it says it must not be routine (also stated by Defra, but farmers ignore this advice).

### Castration

The RSPCA does not allow surgical castration but will approve chemical castration, where Improvac is given to shrink the testes providing justification is given. Ironically, the industry scheme, Red Tractor does not approve any castration.

The RSPCA approves units where pigs spend their life in almost barren pens, never able to see or feel sunlight; to be able to run and play; to explore the natural world; pigs may or may not be mutilated; piglets are taken at the routine industry standard of 21 to 28 days; and to be transported up to eight hours to their death.



### RED TRACTOR SCHEME FOR PIGS

Red Tractor is the largest food scheme in Britain and it is managed by limited company Assured Food Standards (AFS), and owned and funded by the British farming and food industry. The flag logo on Red Tractor approved meat indicates the origin of the food. The flag relates to the chain of production of the food so, for example, when there is a Union Flag, the meat is from Britain. Meat from all parts of the EU can be labelled with the Red Tractor logo using the appropriate flag if they 'meet the same or equivalent standards' ([www.redtractor.org.uk/quality-and-provenance](http://www.redtractor.org.uk/quality-and-provenance)).

The Red Tractor scheme reflects standard industry practice in Britain. Some of the standards benefit animal welfare by going beyond minimum legislation, such as prohibiting surgical and chemical castration of 'meat pigs' and the requirement for on-farm health and welfare monitoring (135).

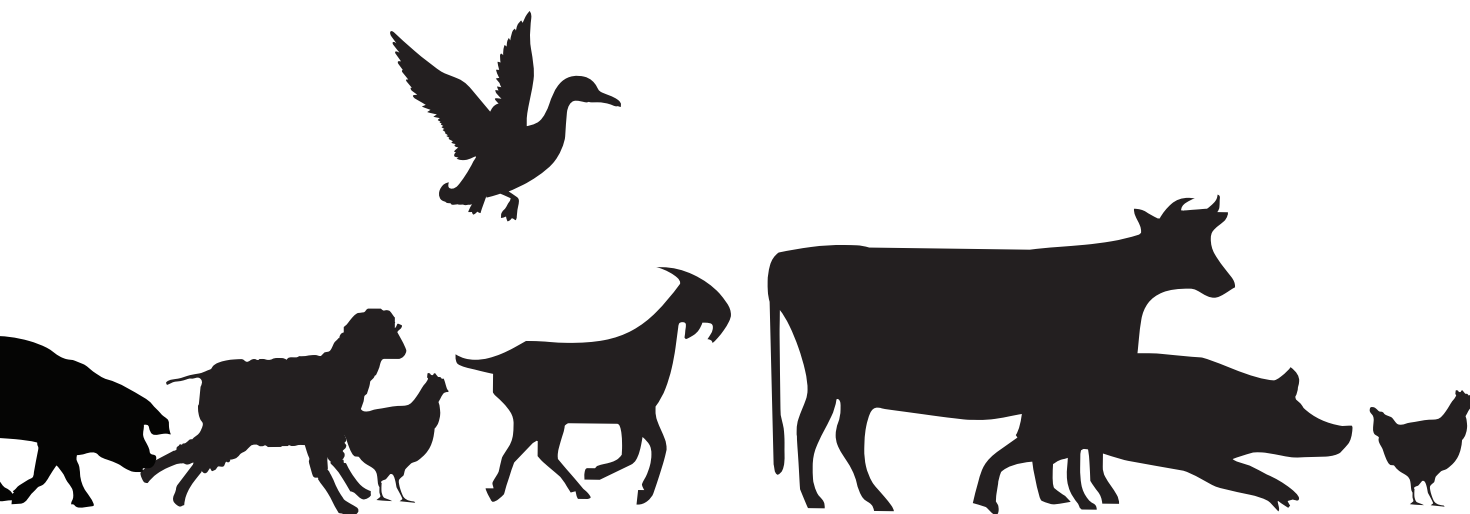
However, in some circumstances the standards inadequately reflect the legislation, such as provision for manipulable material for pigs. Straw or other bedding material does not have to be provided, even in the lying area (135). The scheme recommends environmental enrichment ie straw or other material but then gives the 'cop out clause' by saying 'Objects such as footballs and deformable-plastic pipe can be used'. The scheme also allows pigs to be kept on concrete slatted floors (135).

Red Tractor allows the farrowing crate – a gross welfare assault on the welfare of mother sows and their piglets. Nesting material is recommended but does not have to be provided if the slurry system doesn't permit it; in fact very little environmental stimulation has to be provided. Sows can be put into farrowing crates seven days before farrowing and stay there until weaning is completed (which means sows are in crates five weeks at a time). The crates must only be of a length to allow the sow to lie down and stand up, and the Standards state that the space allowed sows should 'not allow excessive free movement'.

The tail docking, teeth clipping or grinding of pigs is allowed under the Red Tractor Assurance Scheme as long as it is carried out 'as a last resort' and 'not routinely'. This is the same as Defra codes – however, most indoor pigs are mutilated as it is legal! Concrete slatted floors are allowed and bedding is only necessary where floors cannot be drained.

Nose ringing of outdoor pigs is allowed. The purpose of the ring is to cause pain when the pig roots for food – that is how it prevents or reduces the pigs from rooting and digging.

The Red Tractor scheme base their space requirements for intensively produced pigs on that of the minimum requirements of The Welfare of Farmed Animals (England) Regulations 2007 (SI 2007 No. 2078, Schedule 8).



Minimum permitted space allowances for growing pigs are:

Average live weight (kg)	minimum total floor area (m <sup>2</sup> /pig)
<10	0.15
85.1-110	0.65
>110	1.00

Pens used to house a group of sows/gilts can have sides of only 2.8 meters in length. Pregnant animals have 0.95m<sup>2</sup> per gilt and at least 1.3m<sup>2</sup> per sow (135). They spend their life in this miserable small space pregnant, then five weeks in a crate, and then back to this small space – until they are killed.

Viva! investigated Poplar pig farm, near Hull, in 2015 where piglets were crammed together in the equivalent of battery cages, three tiers deep. The only ‘enrichment’ afforded to some of these pigs was a chain dangling from the wire mesh above. The farm was Red Tractor approved and supplied Morrisons supermarket. This investigation was reported in the *Daily Mail* (136).

Elsewhere on the Red Tractor farm, Viva! documented farrowing crates, rotting piglets, ‘rape racks’, and a pile of dirt or faeces in one corner crawling with flies and maggots.

Similarly to the RSPCA, the Red Tractor scheme does not guarantee high welfare. It guarantees implementing a weak, ineffective law which basically states that pigs should have space to turn around, lie down at the same time and have a dry lying area and little else.



Piglets in cages at a Red Tractor approved farm in 2015 (see Appendix One)

Photo © Viva!



Piglet fallen through the cages at a Red Tractor approved farm

Photo © Viva!

# THE SOIL ASSOCIATION STANDARDS FOR ORGANIC FOOD AND FARMING

The Soil Association organic standards assure welfare benefits exceeding standard industry practice. Pigs are kept in family groups; have access to outdoor fields (dependent on weather) with shade, wallows and shelter; direct access to the soil and growing green food; indoor housing is allowed in severe weather so long as plentiful straw bedding is given and access to an outdoor run. Piglets are weaned at eight weeks or later. The guidelines state that 'if necessary, for the last few weeks pigs may be 'finished' in spacious open-sided barns on straw bedding. They must also have access to an outside dunging, rooting and exercise area. The length of time that they are inside must not exceed one fifth of their total lifetime (137, 138).

The Soil Association has banned (137 – 139):

- Nose ringing
- Tail docking
- Farrowing crates
- Castration
- Antibiotics, copper diet supplements or probiotics to promote growth

According to the Soil Association, about 1.5 per cent of UK pigs are organic (15).

The Soil Association spell out the reality of pig farming in the UK. They state that (15):

- 98 per cent of UK pigs are fattened (finished) in sheds. 93 per cent of growing pigs and 60 per cent of mother pigs in the UK are kept indoors
- Approximately 80 per cent of UK pigs have their tails cut off (bored and unhappy pigs shut up in sheds will bite the tails of the pigs they are confined with)
- Around 55 per cent of sows [60 per cent according to FAWC (16)] in the UK give birth while confined in crates, which they remain in until their litter is weaned. At least 35 per cent of pigs reared for meat in the UK are kept in barren systems without any straw bedding
- The largest existing pig factory in the UK has 1,100 breeding sows
- The average size of large-scale intensive pig farms in the UK is around 500–900 breeding sows. The average pig herd size for all farms in the UK is around 75 breeding sows
- Approximately 92 per cent of pigs are kept on 1,400 pig farms



# APPENDIX ONE – THE INACTION OF THE ANIMAL HEALTH & PLANT AGENCY

In September and October 2015, Viva! contacted the Animal Health & Plant Agency (AHPA), an executive agency of Defra, to report footage taken at two pig farms that year, and request that the agency carries out its own investigation.

Viva! never received an acknowledgment from the AHPA, but in preparation for the piece that appeared in the *Daily Mail* journalists were able to confirm that an investigation had been launched into the use of cages at Poplar Farm. Despite offering subsequent help, neither offices have contacted Viva! with their findings.

The two pig farms reported by Viva! were:

- Necton Hall (aka Hall Farm Pig Unit), Necton, Swaffham, Norfolk PE37 8HS
- Poplar Farm, Rimswell, Withernsea, North Humberside HU19 2BZ

The issues outlined by Viva! to AHPA were as follows:

**Cannibalism** – Observed at two visits to Necton Hall

**Environmental enrichment** – The mere legal minimum was observed in pig pens and cages at both Necton Hall (wooden balls) and Poplar Farm (hanging chains and minimal newspaper in farrowing crates). Piglets at Poplar Farm were documented in cages stacked in three tiers. One piglet had apparently dropped through the cage bars and was sitting slouched underneath. Evidence of tail docking was rife on both farms and Viva! questioned what steps the farms had made to enrich the lives of pigs at both farms.

**Ill health** – Pigs were documented coughing at Necton Hall (which is a sign of ill health), and a pig with a swollen anus was filmed at the same farm.

**Dead pigs** – Documented in a pen at Necton Hall and dead piglets at both farms.

**Impregnation pens** – At both farms, Viva! questioned the length of time sows were confined in impregnation pens.

The sows could barely move inside these contraptions.

**Water source** – Viva! questioned whether pigs at Poplar Farm had a sufficient quantity of fresh drinking water.

## LETTERS FROM VIVA! ASKING THE GOVERNMENT TO INVESTIGATE THE FARMS

The following letters, along with video and photographic evidence were sent to the appropriate regional office of the AHPA:

### Poplar Pig Farm, Withernsea

Dear Animal Health

I am writing to you from Viva! Campaigns to report footage we have been passed of a pig farm outside Hull (Poplar Farm, Rimswell, Withernsea, North Humberside, HU19 2BZ). Because of the potential seriousness of the conditions filmed there over two nights (19 August 2015 and 2 September 2015) we wanted to pass this information to you as soon as we were able.

We are assured that strict biosecurity was observed on both occasions and GPS and/or online map footage (as well as farm signage) was obtained to prove location. Also, we are assured that the footage was obtained by legal means through unlocked doors.

Having looked at the Defra guidelines we are unsure of the legality of two areas within the farm and are asking you to investigate and decide on appropriate action where necessary.

#### PIGLETS IN CAGES:

The footage shows weaned piglets kept in small wire group cages that have been stacked three on top of each other in at least two



# PIG FARMING: THE INSIDE STORY

separate rooms. The only 'environmental enrichment' observed is a chain hanging down. We are unsure whether such 'battery cages' for piglets are currently legal in the United Kingdom.



Adding to the concern is the fact that on both occasions piglets were observed on the floor of the rooms. Although it was not filmed, we believe it is



reasonable to presume that – due to the decrepit nature of the cages – that piglets had squeezed through gaps in the cages and fallen to the floor.

This, obviously, could result in injury and would deny the

piglets access to food and water for at least until the piglets were checked on again.

## LENGTH OF TIME SOWS KEPT IN IMPREGNATION PENS

The footage taken on the second night shows approximately 25 sows in cages either awaiting or post impregnation (boars were kept in straw barns opposite). It is unclear how long the sows had been here, but the footage was obtained at around 3am. This might suggest that the sows had been left overnight, which may be in contravention of the law and official guidelines. The sows were covered in flies – and an untended fly/larvae infestation was observed in another shed.



*"The Welfare of Farmed Animals (England) (Amendment) Regulations 2003 (S.I. 2003 No. 299), Schedule 6, Part II, paragraph 7 (3) lists certain exemptions from the requirement that a pig shall be free to turn round without difficulty at all times, including: – for the purpose of service, artificial insemination or collection of semen; provided that the period during which it is so kept is not longer than necessary for that purpose".*

Defra guidelines:

*"90: You should keep the sows in their groups until insemination, at which time they can be moved to an appropriate stall or pen and inseminated. Sows should be allowed time to settle down in the stall or pen, and then exposed to a boar in order to encourage the standing reflex before artificial insemination takes place".*

*"91: Sows should be left undisturbed, to allow uterine contractions, for up to thirty minutes after artificial insemination (and natural service), but they should then rejoin their group in order to minimise bullying within the group hierarchy. When double insemination is used, sows may be penned separately until 30 minutes after the second insemination, but pens must allow the animal to turn round easily".*

## WATER SOURCE

It is unclear from the footage if the trough in front of the cages was for drinking water or urine drain-off. The Welfare of Farmed Animals (England) (Amendment) Regulations 2003 (S.I. 2003 No. 299), Schedule 6, Part II, paragraph 15 states that: "All pigs over two weeks of age must have permanent access to a sufficient quantity of fresh drinking water," and "Livestock must be provided with adequate access to a supply of fresh, clean drinking water".

We believe that all the post-weaned pigs/piglets had been tail docked at the farm. We are aware that this is not meant to be done routinely, but sufficient environmental enrichment should be utilised to negate the need for such mutilations. The footage shows scant environmental enrichment. All that was observed was a small amount of shredded newspaper in the farrowing pens and chains hanging down in the piglet cages and group pens. The boars, however, were kept in pens with straw. The farm claims to keep sows in group housing with straw. This was not observed, but it is possible that this is the case.

Other areas of concern include non-thriving piglets in farrowing pens and a number of dead piglets that had been left for an unknown period of time. Plus fly infestations – including one large cluster of larvae and adult flies in a farrowing unit.

Obviously we wanted to get the footage of the two areas we believed were of most concern off to you as soon as we could. However, if you would like any more information or see any other footage please don't hesitate to contact me.

## Necton Hall (aka Hall Farm Pig Unit), Swaffham

Dear Animal Health  
I am writing to you from Viva! Campaigns to report footage we have obtained of a pig farm outside the village of Necton, Norfolk (Necton Hall, Necton, Swaffham, Norfolk PE37 8HS). Because of the potential seriousness of the conditions filmed there we wanted to pass this information to you as soon as we were able. Footage was taken on the 4 October 2015. We have since been passed footage that was taken in September (4th). Details below.

Strict biosecurity was observed on both occasions and GPS and/or online map footage (as well as farm signage) was obtained to prove location. The footage was obtained by legal means through open and unlocked doors.

Having looked at the law and Defra guidelines we are unsure of the legality of a number of areas within the farm and are asking you to investigate and decide on appropriate action where necessary.



### CANNIBALISM

This was observed on both visits. The footage from the 4th September shows a living pig lying at the back of a pen and another pig chewing on his/her leg. The pig is clearly in pain.

On a second visit pigs were observed biting and possibly eating flesh from a large open wound on a dead pig.

### LACK OF ENVIRONMENTAL ENRICHMENT IN SOME PENS

Whilst some of the pens for group housing had a large wooden ball for at least some environmental enrichment, it seems quite arbitrary because other pens in the same building had no environmental enrichment at all.

The Defra Codes say:

*“Environmental Enrichment The Welfare of Farmed Animals (England) (Amendment) Regulations 2003 (S.I. 2003 No. 299), Schedule 6, Part II, paragraph 16 states that: To enable proper investigation and manipulation activities, all pigs must have permanent access to a sufficient quantity of material such as straw, hay, wood, sawdust, mushroom compost, peat or a mixture of such which does not adversely affect the health of the animals.*

*80 Environmental enrichment provides pigs with the opportunity to root, investigate, chew and play. Straw is an excellent material for environmental enrichment as it can satisfy many of the pigs’ behavioural and physical needs. It provides a fibrous material which the pig can eat; the pig is able to root in and play with long straw; and, when used as bedding, straw can provide the pig with physical and thermal comfort.*

*81 Objects such as footballs and chains can satisfy some of the pigs’ behavioural needs, but can quickly lose their novelty factor. The long-term use of such items is not, therefore, recommended unless they are used in conjunction with materials such as those listed above, or are changed on a weekly basis”.*



### PIGS COUGHING

At several times during the footage pigs can be heard, what sounds like, coughing. This could be an indicator of disease.

# PIG FARMING: THE INSIDE STORY

## DEAD PIGLETS AND SEVERED TAILS LEFT UNCOLLECTED IN AISLE OF FARROWING UNIT

Whilst we are aware that piglet mortality is a reality on intensive farms, the fact that dead piglets and piglet tails have been left on the floor of open sheds, we believe, shows bad stockmanship – and scant regard for biosecurity (risks attracting flies, rats etc).



Also, as stated above, many of the pens had no or very little environmental enrichment. This appears to contravene the legislation below:

*“The Welfare of Farmed Animals (England) (Amendment) Regulations 2003 (S.I. 2003 No. 299), Schedule 6, Part II, paragraphs 21 and 23 (1) state that: 21. The following procedure shall not be carried out routinely but only where there is evidence that injuries to sows’ teats or to other pigs’ ears or tails have occurred: – docking of a part of the tail; but no tail docking may be carried out unless other measures to improve environmental conditions or management systems have been taken in order to prevent tail biting or other vices”*



## LENGTH OF TIME SOWS KEPT IN IMPREGNATION PENS:

The footage taken on the second night shows approximately 20 sows in cages either awaiting or post impregnation (boars were kept opposite). It is unclear how long the sows had been here, but the footage was obtained at around 2.30am. This might suggest that the sows had been left overnight, which may be in contravention of the law and official guidelines.

*“The Welfare of Farmed Animals (England) (Amendment) Regulations 2003 (S.I. 2003 No. 299), Schedule 6, Part II, paragraph 7 (3) lists certain exemptions from the requirement that a pig shall be free to turn round without difficulty at all times, including: – for the purpose of service, artificial insemination or collection of semen; provided that the period during which it is so kept is not longer than necessary for that purpose”.*

Defra guidelines:

*“90: You should keep the sows in their groups until insemination, at which time they can be moved to an appropriate stall or pen and inseminated. Sows should be allowed time to settle down in the stall or pen, and then exposed to a boar in order to encourage the standing reflex before artificial insemination takes place”.*

*“91: Sows should be left undisturbed, to allow uterine contractions, for up to thirty minutes after artificial insemination (and natural service), but they should then rejoin their group in order to minimise bullying within the group hierarchy. When double insemination is used, sows may be penned separately until 30 minutes after the second insemination, but pens must allow the animal to turn round easily”.*

## PIG WITH SWOLLEN ANUS

The animal below, as shown in the footage, has what looks like a swollen, red and possibly infected anal region. The footage shows that he appeared to have difficulty moving and could possibly be in pain.



*“Sick and Injured Animals The Welfare of Farmed Animals (England) Regulations 2000 (S.I. 2000 No. 1870), Schedule 1, paragraph 5 states that: any animals which appear to be ill or injured – - shall be cared for*



*appropriately without delay; and – where they do not respond to care, veterinary advice shall be obtained as soon as possible”.*

Obviously we wanted to get the footage of the two areas we believed were of most concern off to you as soon as we could. However, if you would like any more information or see any other footage please don't hesitate to contact me.

### **Actions taken due to Viva!'s investigations**

**Poplar Farm:** although Animal Health did not respond to Viva!, Morrisons supermarket were shamed by the media coverage Viva! secured and requested that the farm remove the cages. The farm reverted to more standard intensive farming practices. Not a victory, but at least Viva! stopped the piglets being caged.

**Necton Hall:** Animal Health did not respond to Viva!. This farm was revisited in April 2016. Nothing had changed – other than an alarm being fitted.



## REFERENCES

- (1) FAOSTAT. 2013. Food and Agriculture Organisation of the United Nations Statistics Division. [faostat3/fao.org](http://faostat3/fao.org) [Accessed 14 April 2016]
- (2) AHDB. 2016. Export Bulletin. *Agriculture and Horticulture Development Board* [online] Available from: [www.smartways.createsend.com/t/ViewEmailArchive/r/219539C3BE11339C2540EF23F30FEDED/C67FD2F38AC4859C](http://www.smartways.createsend.com/t/ViewEmailArchive/r/219539C3BE11339C2540EF23F30FEDED/C67FD2F38AC4859C) [Accessed 30 January 2016]
- (3) Statista. 2016. Global net pork production in 2013, by country (in 1,000 metric tons) [online] Available from: [www.statista.com/statistics/273232/net-pork-production-worldwide-by-country](http://www.statista.com/statistics/273232/net-pork-production-worldwide-by-country) [Accessed 2 February 2016]
- (4) Eurostat. 2015. Pig farming sector – statistical portrait 2014 [2015] [online] Available from: [www.ec.europa.eu/eurostat/statistics-explained/index.php/Pig\\_farming\\_sector\\_-\\_statistical\\_portrait\\_2014](http://www.ec.europa.eu/eurostat/statistics-explained/index.php/Pig_farming_sector_-_statistical_portrait_2014) [Accessed 2 February 2016]
- (5) The Economist. 2014. Empire of the pig [online] Available from: [www.economist.com/news/christmas-specials/21636507-chinas-insatiable-appetite-pork-symbol-countrys-rise-it-also](http://www.economist.com/news/christmas-specials/21636507-chinas-insatiable-appetite-pork-symbol-countrys-rise-it-also). 20 December 2014. The Economist [Accessed 2 February 2016]
- (6) WWF. 2014. Soy Report Card. World Wide Fund for Nature [online] Available from: [www.wwf.se/source.php/1568593/sojarapporten-2014.pdf](http://www.wwf.se/source.php/1568593/sojarapporten-2014.pdf) [Accessed 26 January 2016]
- (7) Defra. 2014. Agriculture in the United Kingdom. Department for Environment and Rural Affairs. Defra June Agricultural Survey
- (8) Calculations based on Agriculture in the United Kingdom 2007 and 2014 (Defra)
- (9) Gani, A. 2015. UK shoppers give pork the chop after processed meats linked to cancer. [online] Available from: [www.theguardian.com/uk-news/2015/nov/23/bacon-sausage-sales-fall-who-report-cancer-risk-processed-meat](http://www.theguardian.com/uk-news/2015/nov/23/bacon-sausage-sales-fall-who-report-cancer-risk-processed-meat). 23 November 2015. The Guardian [Accessed 2 February 2016]
- (10) International Agency for Research on Cancer. 2015. IARC Monographs evaluate consumption of red meat and processed meat [online] Available from: [www.iarc.fr/en/media-centre/pr/2015/pdfs/pr240\\_E.pdf](http://www.iarc.fr/en/media-centre/pr/2015/pdfs/pr240_E.pdf) [Accessed 9 March 2016]
- (11) Viva! 2016. Why meat, fish & dairy harm [online] Available from: [www.vivahealth.org.uk/why-meat-and-dairy-harm](http://www.vivahealth.org.uk/why-meat-and-dairy-harm) [Accessed 2 February 2016]
- (12) Defra. 2016. United Kingdom Slaughter Statistics – January 2016 [online] Available from: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/501051/slaughter-statsnotice-18feb16.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/501051/slaughter-statsnotice-18feb16.pdf) [Accessed 23 February 2016]
- (13) AHDB. 2016. Pig holdings in the UK. Agriculture and Horticulture Development Board [online] Available from: [www.pork.ahdb.org.uk/prices-stats/industry-structure/pig-holdings-in-the-uk](http://www.pork.ahdb.org.uk/prices-stats/industry-structure/pig-holdings-in-the-uk) [Accessed 2 February 2016]
- (14) AHDB. 2016 MeatStats. Agriculture and Horticulture Development Board [online] Available from: <http://pork.ahdb.org.uk/media/74855/meatstats-1-uk-meat-and-livestock-facts.pdf> [Accessed 24 February 2016]
- (15) Soil Association. 2015. Factory farmed pigs – the facts [online] Available from: [www.soilassociation.org/notinmybanger/factoryfarmedpigsthefacts](http://www.soilassociation.org/notinmybanger/factoryfarmedpigsthefacts) [Accessed 2 February 2016]
- (16) FAWC. 2015. Opinion on Free Farrowing Systems. Farm Animal Welfare Council [online] Available from: [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/478588/Opinion\\_on\\_Free\\_Farrowing\\_Systems.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/478588/Opinion_on_Free_Farrowing_Systems.pdf) [Accessed 12 February 2016]
- (17) AHDB. 2008. Structure of the UK Pig Industry. A survey of loose housed systems by Analysis Group. Agriculture and Horticulture Development Board
- (18) AHDB. 2016. UK Pig Meat Exports. Agriculture and Horticulture Development Board [online] Available from: <http://pork.ahdb.org.uk/prices-stats/imports-exports/uk-pig-meat-exports> [Accessed 24 February 2016]
- (19) AHDB. 2015. Pig market trends. Agriculture and Horticulture Development Board [online] Available from: [www.pork.ahdb.org.uk/media/74578/pig-market-trends-issue-126\\_november-15.pdf](http://www.pork.ahdb.org.uk/media/74578/pig-market-trends-issue-126_november-15.pdf) [Accessed 24 February 2016]
- (20) Hall, J. 2012. Britain to sell thousands of pigs to China in export push. [online] Available from: [www.telegraph.co.uk/news/uknews/9270151/Britain-sells-thousands-of-pigs-to-China-in-export-push.html](http://www.telegraph.co.uk/news/uknews/9270151/Britain-sells-thousands-of-pigs-to-China-in-export-push.html). 16 May 2012. The Telegraph [Accessed 2 February 2016]
- (21) Rundle, M. 2012. Britain to sell thousands of pigs to China in export push. [online] Available from: [www.huffingtonpost.co.uk/2012/05/17/britain-to-export-thousands-pigs-china\\_n\\_1523458.html](http://www.huffingtonpost.co.uk/2012/05/17/britain-to-export-thousands-pigs-china_n_1523458.html). 17 May 2012. The Huffington Post [Accessed 2 February 2016]
- (22) Watt, N. 2013. UK and China agree £45m pig semen export deal. [online] Available from: [www.theguardian.com/world/2013/dec/04/pig-semen-export-deal-china](http://www.theguardian.com/world/2013/dec/04/pig-semen-export-deal-china). 4 December 2013. The Guardian [Accessed 24 February 2016]
- (23) AHDB. 2015. BPEX Pig Yearbook 2013/2014. Agriculture and Horticulture Development Board [online] Available from: [http://pork.ahdb.org.uk/media/2420/the\\_bpex\\_yearbook\\_2013-2014.pdf](http://pork.ahdb.org.uk/media/2420/the_bpex_yearbook_2013-2014.pdf) [Accessed 24 February 2016]
- (24) Viva! 2014. New report says Danish pigs beaten black and blue [online] Available from: [www.viva.org.uk/what-we-do/about-us/media-centre/media-releases/new-report-says-danish-pigs-beaten-black-and-blue](http://www.viva.org.uk/what-we-do/about-us/media-centre/media-releases/new-report-says-danish-pigs-beaten-black-and-blue) [Accessed 2 February 2016]
- (25) Viva! 2016. Can you trust the tractor? [online] Available from: [www.viva.org.uk/pigs/can-you-trust-the-tractor](http://www.viva.org.uk/pigs/can-you-trust-the-tractor) [Accessed 2 February 2016]
- (26) Red Tractor. 2016. Red Tractor [online] Available from: [www.assurance.redtractor.org.uk](http://www.assurance.redtractor.org.uk) [Accessed 2 February 2016]
- (27) Viva! 2016. Pig Factsheet [online] Available from: [www.viva.org.uk/pigs/fact-sheet](http://www.viva.org.uk/pigs/fact-sheet) [Accessed 2 February 2016]
- (28) AHDB. 2011. BPEX Pig Yearbook 2011. Agriculture and Horticulture Development Board
- (29) Poulter S. 2011. Pain of the pigs: Undercover filming shows animals having their teeth clipped off with metal pliers without anaesthetic [online] Available from: [www.dailymail.co.uk/news/article-2075225/Pain-pigs-Undercover-filming-shows-animals-having-teeth-clipped-metal-pliers-anaesthetic.html](http://www.dailymail.co.uk/news/article-2075225/Pain-pigs-Undercover-filming-shows-animals-having-teeth-clipped-metal-pliers-anaesthetic.html). 16 December 2011. The Daily Mail [Accessed 2 February 2016]
- (30) FAWC. 2011. Opinion on mutilations and environmental enrichment in piglets and growing pigs. Farm Animal Welfare Council [online] Available from: [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/325042/FAWC\\_opinion\\_on\\_pig\\_mutilations\\_and\\_environmental\\_enrichment.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/325042/FAWC_opinion_on_pig_mutilations_and_environmental_enrichment.pdf) [Accessed 26 January 2016]

- (31) Giuffra E, Kijas JM, Amarger V, Carlborg O, Jeon and Andersson L. 2000. The origin of the domestic pig: independent domestication and subsequent introgression. *Genetics* 154 1795-1791
- (32) Marino L and Colvin CM. 2015. Thinking pigs: a comparative review of cognition, emotion and personality in *Sus domesticus*. *International Journal of Comparative Psychology* 28 eScholarship
- (33) Held S, Cooper JJ and Mendl M. 2009. Advances in the study of cognition, behavioural priorities and emotions. In J.N. Marchant-Forde (Ed), *The welfare of pigs* (pp 47-94), Springer Science & Business Media BV
- (34) Oliver W. and Leus K. 2008. *Sus scrofa*. The IUCN Red List of Threatened Species 2008: e.T41775A10559847. <http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T41775A10559847.en>. [Accessed 21 February 2016]
- (35) Masson J. 2002. *The Secret Life of the Pig: the Emotional World of Farm Animals*. Random House
- (36) Stolba A and Wood-Gush DGM. 1989. The Behaviour of Pigs in a Semi-Natural Environment. *Animal Production*, 48, 419-425
- (37) Baskin, L. & Danell, K, 2003. *Ecology of Ungulates: A Handbook of Species in Eastern Europe and Northern and Central Asia* (pp 15-38), Springer Science & Business Media,
- (38) Wickline, K. 2014. "*Sus scrofa*" (On-line), *Animal Diversity Web*. University of Michigan Zoology Museum. [http://animaldiversity.org/accounts/Sus\\_scrofa](http://animaldiversity.org/accounts/Sus_scrofa) [Accessed 21 February 2016]
- (39) Forestry Commission, 2015. Feral wild boar in the Forest of Dean. 3 December 2015 [www.forestry.gov.uk/forestry/inf-d-9fyfc5](http://www.forestry.gov.uk/forestry/inf-d-9fyfc5) [Accessed 21 February 2016]
- (40) Helft M. 1997. Pig video arcades critique life in the pen. [online] [www.wired.com/science/discoveries/news/1997/06/4302](http://www.wired.com/science/discoveries/news/1997/06/4302). June 6. *Wired* [Accessed 21 February 2016]
- (41) Wood-Gush DGM & Stolba, A. 1983. *Elements of Ethology: A Textbook for Agricultural and Veterinary Students* (London, U.K.: Chapman & Hall, p. 38)
- (42) SVC. 1997. The welfare of intensively kept pigs. Report of the Scientific Veterinary Committee. Directorate General XXIV of the European Commission. Adopted 30th September 1997. Doc XXIV/ScVc/0005/97. Scientific Veterinary Committee, Animal Welfare Section, Brussels, Belgium
- (43) SAFE. 2015. The end of sow stalls [online] Available from: <http://safe.org.nz/articles/031215/end-sow-stalls> [Accessed 2 February 2016]
- (44) Australian pork. 2016. [online] Available from: [www.australianpork.com.au/industry-focus/animal-welfare/housing](http://www.australianpork.com.au/industry-focus/animal-welfare/housing) [Accessed 2 February 2016]
- (45) Lean IJ. 1994. *Pigs. Management and Welfare of Farm Animals*. UFAW
- (46) Farmers Weekly. 2015. Pig sector urged to move away from farrowing crates [online] Available from: [www.fwi.co.uk/livestock/pig-sector-urged-to-move-away-from-farrowing-crates.htm](http://www.fwi.co.uk/livestock/pig-sector-urged-to-move-away-from-farrowing-crates.htm). 2 December 2015. *Farmers Weekly* [Accessed 18 January 2016]
- (47) BPEX. 2011. 20:20 Pig Health and Welfare [online] Available from: [www.pork.ahdb.org.uk/media/2233/2020-pig-health-and-welfare.pdf](http://www.pork.ahdb.org.uk/media/2233/2020-pig-health-and-welfare.pdf) [Accessed 18 January 2016]
- (48) Edwards, S. 2011. *Pigs. Management and welfare of farmed animals*. UFAW Farm Handbook.
- (49) BPEX, 2008. Pig cost of production in selected countries.
- (50) AHDB. 2015. BPEX Pig Yearbook 2014/15
- (51) Weber R, Keil NM, Fehr M and Horat R. 2007 Piglet mortality on farms using farrowing systems with or without crates. *Animal Welfare* 16 277-279
- (52) Far Eastern Agriculture. 1996. *The Future of the Farrowing Crate*
- (53) Pig Farming. 1998. *Freedom in the Farrowing House*
- (54) Gregory NG. 1998. *Animal Welfare and Meat Science*. CABI Publishing
- (55) Stevenson P. 1994. 'For Their Own Good' A Study of Animal Mutilations. CIWF Trust
- (56) McKinnon AJ, Edwards SA, Stephens DB and Walters DE. 1989. Behaviour of Groups of Weaner Pigs in three different housing systems. *British Veterinary Journal* 145 367-372
- (57) Simonsen HB, Klinken L, Bindsell E. 1991. Histopathology of intact and docked piglets. *British Veterinary Journal* 147 407-412
- (58) Expert Group. 2010. First progress report from the European declaration on alternatives to surgical castration of pigs (16/12/2010) [online] available from: [www.ec.europa.eu/dgs/health\\_food-safety/information\\_sources/docs/ahw/20150226\\_ahw\\_pig-castration\\_pres\\_9\\_en.pdf](http://www.ec.europa.eu/dgs/health_food-safety/information_sources/docs/ahw/20150226_ahw_pig-castration_pres_9_en.pdf) [Accessed 2 February 2016]
- (59) European Commission. 2015. Workshop on alternatives to pig castration [online] Available from: [www.ec.europa.eu/dgs/health\\_food-safety/information\\_sources/events/20150226\\_ahw\\_pig-castration\\_en.htm](http://www.ec.europa.eu/dgs/health_food-safety/information_sources/events/20150226_ahw_pig-castration_en.htm) [Accessed 2 February 2016]
- (60) Expert Group. 2010. First progress report from the European declaration on alternatives to surgical castration of pigs (16/12/2010) [online] available from: [www.ec.europa.eu/dgs/health\\_food-safety/information\\_sources/docs/ahw/20150226\\_ahw\\_pig-castration\\_pres\\_9\\_en.pdf](http://www.ec.europa.eu/dgs/health_food-safety/information_sources/docs/ahw/20150226_ahw_pig-castration_pres_9_en.pdf) [Accessed 2 February 2016]
- (61) European Commission. 2016. Alternatives to pig castration [online] Available from: [www.ec.europa.eu/food/animals/welfare/practice/farm/pigs/castration\\_alternatives/index\\_en.htm](http://www.ec.europa.eu/food/animals/welfare/practice/farm/pigs/castration_alternatives/index_en.htm) [Accessed 2 February 2016]
- (62) Defra. 2003. Code of Recommendations of the Welfare of Livestock. Pigs. Department for Food and Rural Affairs [online] Available from: [www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/69369/pb7950-pig-code-030228.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69369/pb7950-pig-code-030228.pdf) [Accessed 2 February 2016]
- (63) Torrey S, Devillers N, Lessard M, Farmer C and Widowski T. 2007. Determining the optimum age for tail docking and ear notching neonatal pigs. *Proceedings of the 41st International Congress of the International Society for Applied Ethology* p238
- (64) Leslie E, Hernández Jover M, Newman R, Holyoake P. 2010. Assessment of acute pain experienced by piglets from ear tagging, ear notching and intraperitoneal injectable transponders. *Applied Animal Behaviour Science* 127 (3-4) 86-95
- (65) Holyoake PK, Broek DJ, and Callinan APL. 2004. The effects of reducing the length of canine teeth in sucking pigs by clipping or grinding. *Australian Veterinary Journal* 82 (9) 574-6
- (66) Sonoda et al. 2013. Tail biting in pigs - causes and management intervention strategies to reduce the behavioural disorder. A review. *Berl Munch Tierarztl Wochenschr* 126(3-4)104-12
- (67) Kritas SK, Morrison RB. 2007. Relationships between tail biting in pigs and disease lesions and condemnations at slaughter. *Vet Record* 160 149-152
- (68) Pig Farming. 1998. Exeter University report UK Pig Industry is Changing Hands Rapidly
- (69) Pig Farming. 1999. Release the Pressure
- (70) AVMA. 2015. Welfare implications of teeth clipping, tail docking and permanent identification of piglets. American Veterinary Medical Association [online] Available from: [www.avma.org/KB/Resources/LiteratureReviews/Pages/Welfare-implications-of-practices-performed-on-piglets.aspx](http://www.avma.org/KB/Resources/LiteratureReviews/Pages/Welfare-implications-of-practices-performed-on-piglets.aspx) [Accessed 18th January 2016]
- (71) Simonsen HB, Klinken L, Bindsell E. 1991. Histopathology of intact and docked piglets. *British Veterinary Journal* 147:407-412

# PIG FARMING: THE INSIDE STORY

- (72) Farmers Weekly. 2013. New project aims to end tail docking in the EU [online] Available from: [www.fwi.co.uk/livestock/new-project-aims-to-end-pig-tail-docking-in-eu.htm](http://www.fwi.co.uk/livestock/new-project-aims-to-end-pig-tail-docking-in-eu.htm). 11 September 2013. Farmer Weekly [Accessed 18th January 2016]
- (73) Arey D. 1991. Tail biting in pigs. *Farm Building Progress*. 105 20-23
- (74) Viva! 2013. Mega pig prisons [online] Available from: [www.viva.org.uk/what-we-do/latest-updates/mega-pig-prisons](http://www.viva.org.uk/what-we-do/latest-updates/mega-pig-prisons) [Accessed 2 February 2016]
- (75) BBC News. 2015. Foston pig farm permit rejected by Environment Agency [online] Available from: [www.bbc.co.uk/news/uk-england-derbyshire-31584461](http://www.bbc.co.uk/news/uk-england-derbyshire-31584461). 23 February 2015. BBC News [Accessed 2 February 2016]
- (76) Mallett C. 2015. Giant pig farm: controversial Derbyshire plans take new twist [online] Available from: [www.derbytelegraph.co.uk/Firm-giant-Derbyshire-pig-farm-plans-appeals/story-27895380-detail/story.html](http://www.derbytelegraph.co.uk/Firm-giant-Derbyshire-pig-farm-plans-appeals/story-27895380-detail/story.html). 30 February 2015. Derby Telegraph [Accessed 2 February 2016]
- (77) EFSA. 2007. The risks associated with tail biting in pigs and possible means to reduce the need for tail docking considering the different housing and husbandry systems [online] Available from: [www.efsa.europa.eu/sites/default/files/scientific\\_output/files/main\\_documents/611.pdf](http://www.efsa.europa.eu/sites/default/files/scientific_output/files/main_documents/611.pdf) [Accessed at 19 January 2016]
- (78) UNFAO, 2006. Livestock's long shadow.
- (79) WWF. 2014. The growth of soy: impacts and solutions. WWF International, Gland, Switzerland
- (80) GMO Compass, 2014: Importing GM soybeans or expanding European cultivation of grain legumes: which is more sustainable? Available online: [http://www.gmo-compass.org/eng/news/572.eu\\_imports\\_gm\\_soy\\_sustainable.html](http://www.gmo-compass.org/eng/news/572.eu_imports_gm_soy_sustainable.html) [accessed 7/2/2016]
- (81) Friends of the Earth, 2008. [www.foe.co.uk/sites/default/files/downloads/livestock\\_impacts\\_summary.pdf](http://www.foe.co.uk/sites/default/files/downloads/livestock_impacts_summary.pdf)
- (82) The Pig Site. 2016. Leg weakness (Osteochondrosis – OCD) [online] Available from: [www.thepigsite.com/pighealth/article/189/leg-weakness-osteochondrosis-ocd](http://www.thepigsite.com/pighealth/article/189/leg-weakness-osteochondrosis-ocd) [Accessed 19 January 2016]
- (83) The Merck Veterinary Manual. 2016. Swine Dentistry (bloody scours) [online] Available from: [www.merckvetmanual.com/mvm/digestive\\_system/intestinal\\_diseases\\_in\\_pigs/swine\\_dysentery.html](http://www.merckvetmanual.com/mvm/digestive_system/intestinal_diseases_in_pigs/swine_dysentery.html) [Accessed 19 January 2016]
- (84) Taylor DJ. 1999. Pig Diseases 7th Edition
- (85) White M. 2016. Pig health – Streptococcal meningitis [online] Available from: [www.nadis.org.uk/bulletins/streptococcal-meningitis.aspx?altTemplate=PDF](http://www.nadis.org.uk/bulletins/streptococcal-meningitis.aspx?altTemplate=PDF) [Accessed 19 January 2016]
- (86) The Pig Site. 2016. Porcine Dermatitis and Nephropathy Syndrome (PDNS) [online] Available from: [www.thepigsite.com/diseaseinfo/82/porcine-dermatitis-and-nephropathy-syndrome-pdns](http://www.thepigsite.com/diseaseinfo/82/porcine-dermatitis-and-nephropathy-syndrome-pdns) [Accessed 19 January 2016]
- (87) Defra. 2014. Classical swine fever: how to spot and report the disease [online] Available from: [www.gov.uk/guidance/classical-swine-fever](http://www.gov.uk/guidance/classical-swine-fever) [Accessed 19 January 2015]
- (88) Bowers S and Brown P. 2000. Swine fever crisis hits pig farms [online] [www.theguardian.com/uk/2000/aug/12/ruralaffairs.paulbrown](http://www.theguardian.com/uk/2000/aug/12/ruralaffairs.paulbrown). 12 August 2000. The Guardian [Accessed at 19 January 2016]
- (89) NHS. 2016. Swine flu (H1N1) [online] [www.nhs.uk/conditions/pandemic-flu/Pages/Introduction.aspx](http://www.nhs.uk/conditions/pandemic-flu/Pages/Introduction.aspx) [Accessed at 7 March 2016]
- (90) BBC News. 2016. Leicester Royal Infirmary closes wards over swine flu [online] Available from: [www.bbc.co.uk/news/uk-england-leicestershire-35605670](http://www.bbc.co.uk/news/uk-england-leicestershire-35605670). 18 February 2016. BBC News [Accessed 7 March 2016]
- (91) The Voice. 2016. Woman pregnant with twins dies from swine flu [online] Available from: [www.voice-online.co.uk/article/woman-pregnant-twins-dies-swine-flu](http://www.voice-online.co.uk/article/woman-pregnant-twins-dies-swine-flu). 7 March 2016. The Voice [Accessed 7 March 2016]
- (92) The Daily Observer. 2016. Four deaths attributed to swine flu [online] Available from: <http://antiguaobserver.com/four-deaths-attributed-to-swine-flu>. 6 March 2016. The Daily Observer [Accessed 7 March 2016]
- (93) Reuters. 2016. Mexico sees spike in H1N1 swine flu cases, 68 people dead [online] Available from: <http://uk.reuters.com/article/us-mexico-flu-idUKKCN0W50PR>. 3 March 2016. Reuters [Accessed 7 March 2016]
- (94) The Times of India. 2016. Swine flu claims one more life in Rajasthan [online] Available from: <http://timesofindia.indiatimes.com/india/Swine-flu-claims-one-more-life-in-Rajasthan/articleshow/51288930.cms>. 7 March 2016. Times of India [Accessed 7 March 2016]
- (95) McDonald H. 2016. Man dies of swine flu in Northern Ireland [online] Available from: [www.theguardian.com/uk-news/2016/feb/09/man-dies-of-swine-flu-in-northern-ireland](http://www.theguardian.com/uk-news/2016/feb/09/man-dies-of-swine-flu-in-northern-ireland). 9 February 2016. The Guardian [Accessed 7 March 2016]
- (96) CDC. 2016. What people who raise pigs need to know about influenza (flu) [online] Available from: [www.cdc.gov/flu/swineflu/people-raise-pigs-flu.htm](http://www.cdc.gov/flu/swineflu/people-raise-pigs-flu.htm) [Accessed 7 March 2016]
- (97) Tempest M. 2001. Election postponed [online] Available from: [www.theguardian.com/politics/2001/apr/02/election2001.qanda](http://www.theguardian.com/politics/2001/apr/02/election2001.qanda). 2 April 2001. The Guardian [Accessed 19 January 2016]
- (98) The Telegraph. 2002. 10 million animals were slaughtered in foot and mouth cull [online] Available from: [www.telegraph.co.uk/news/uknews/1382356/10-million-animals-were-slaughtered-in-foot-and-mouth-cull.html](http://www.telegraph.co.uk/news/uknews/1382356/10-million-animals-were-slaughtered-in-foot-and-mouth-cull.html). 23 January 2002. The Telegraph [Accessed 19 January 2016]
- (99) The Guardian. 2001. School dinners link to infected bugs
- (100) The Guardian. 2001. Disease trail led to this squalid farm
- (101) Brown P. 2001. The farmer at the centre of the crisis now gripping agriculture [online] Available from: [www.theguardian.com/uk/2001/feb/24/footandmouth.paulbrown2](http://www.theguardian.com/uk/2001/feb/24/footandmouth.paulbrown2). 24 February 2001. The Guardian [Accessed 2 March 2016]
- (102) The Observer. 2001. How our Farmers Sowed their very Own Downfall
- (103) BBC News. 2002. Farmer kept quiet about disease [online] Available from: <http://news.bbc.co.uk/1/hi/england/2016188.stm>. 30 May 2002. BBC News [Accessed 19 January 2016]
- (104) Wainwright. 2003. Foot and mouth farmer's 40 year bill [online] [www.theguardian.com/uk/2003/feb/19/footandmouth.martinwainwright](http://www.theguardian.com/uk/2003/feb/19/footandmouth.martinwainwright). 19 February 2003. The Guardian [Accessed 19 January 2016]
- (105) The Daily Mail. 2011. South Korea burys alive 1.4 m pigs ALIVE in bid to eradicate foot and mouth disease [online] [www.dailymail.co.uk/news/article-1346775/South-Korea-buries-1-4m-pigs-ALIVE-bid-eradicate-foot-mouth-disease.html](http://www.dailymail.co.uk/news/article-1346775/South-Korea-buries-1-4m-pigs-ALIVE-bid-eradicate-foot-mouth-disease.html). 13 January 2011. The Daily Mail [Accessed 19 January 2016]
- (106) Reade B. 2001. Stop this sick compensation ag-rich culture [online] [www.mirror.co.uk/news/uk-news/stop-this-sick-compensation-ag-rich-culture-535020](http://www.mirror.co.uk/news/uk-news/stop-this-sick-compensation-ag-rich-culture-535020). The Mirror [Accessed 19 January 2016]
- (107) Cramb A, Savill R and Pook S. 2001. Tears of the foot and mouth 'millionaire' [online] [www.telegraph.co.uk/news/uknews/1336505/Tears-of-the-foot-and-mouth-millionaire.html](http://www.telegraph.co.uk/news/uknews/1336505/Tears-of-the-foot-and-mouth-millionaire.html). 6 August 2001. The Telegraph [Accessed 19 January 2016]
- (108) Soil Association. 2016. E. Coli superbugs on farms and food Soil Association [online] Available from: [www.soilassociation.org/LinkClick.aspx?fileticket=yCT9su5iVQ%3d&abid=1841](http://www.soilassociation.org/LinkClick.aspx?fileticket=yCT9su5iVQ%3d&abid=1841) [Accessed 7 February 2016]

- (109) European Commission press release, Brussels, 22 Dec 2005 [http://europa.eu/rapid/press-release\\_IP-05-1687\\_en.htm](http://europa.eu/rapid/press-release_IP-05-1687_en.htm) [Accessed 7 February 2016]
- (110) Adjiri-Awore A and Van Lunen TA. (2005). Subtherapeutic use of antibiotics in pork production: Risks and alternatives. *Canadian Journal of Animal Science* 85 (2) 117-130. <http://pubs.aic.ca/doi/abs/10.4141/A04-041>
- (111) Young R et al. 1999. The Use and Misuse of Antibiotics in UK Agriculture, part 2: Antibiotic resistance and Human Health
- (112) MAFF. 1998. A Review of Antimicrobial Resistance in the Food Chain. Ministry of Agriculture, Food and Fisheries
- (113) O'Neill J. 2015. Antimicrobials in agriculture and the environment: reducing unnecessary use and waste. The review on antimicrobial resistance, chaired by Jim O'Neill, December 2015. [online] Available from: <http://amr-review.org/sites/default/files/Antimicrobials%20in%20agriculture%20and%20the%20environment%20-%20Reducing%20unnecessary%20use%20and%20waste.pdf> [Accessed 7 February 2016]
- (114) Alliance to save our antibiotics. 2013. Antibiotic resistance – the impact of intensive farming on human health [online] Available from: [www.civf.org.uk/media/3758854/Antibiotics-Alliance-briefing-10-March-2013.pdf](http://www.civf.org.uk/media/3758854/Antibiotics-Alliance-briefing-10-March-2013.pdf) [Accessed 7 February 2016]
- (115) Poulter S. 2015. New potentially lethal superbug resistant antibiotic [online] Available from: [www.dailymail.co.uk/health/article-3369277/New-potentially-lethal-superbug-resistant-antibiotics-UK-12-people-infected.html](http://www.dailymail.co.uk/health/article-3369277/New-potentially-lethal-superbug-resistant-antibiotics-UK-12-people-infected.html). 21 December 2015. The Daily Mail [Accessed 20 January 2016]
- (116) Press Association. 2015. Gene making superbug bacteria resistant to 'last resort' antibiotic found in UK [online] Available from: [www.dailymail.co.uk/wires/pa/article-3369527/Gene-making-superbug-bacteria-resistant-resort-antibiotic-UK.html](http://www.dailymail.co.uk/wires/pa/article-3369527/Gene-making-superbug-bacteria-resistant-resort-antibiotic-UK.html). 22 December 2015. The Daily Mail [Accessed 20 January 2016]
- (117) Alliance to save our antibiotics. 2014. Antimicrobial resistance – why the irresponsible use of antibiotics in agriculture must stop [online] Available from: [www.soilassociation.org/LinkClick.aspx?fileticket=G9q4uEb5del%3D&tabid=1841](http://www.soilassociation.org/LinkClick.aspx?fileticket=G9q4uEb5del%3D&tabid=1841) [Accessed 20 January 2015]
- (118) The Daily Mail. Superbugs in farm animals that threatens human life [online] Available from: [www.dailymail.co.uk/health/article-100117/Superbugs-farm-animals-threaten-human-health.html](http://www.dailymail.co.uk/health/article-100117/Superbugs-farm-animals-threaten-human-health.html) [Accessed 20 January 2016]
- (119) Press Association. 2015. 'Almost too late': fears of global superbug crisis in wake of antibiotic misuse [online] Available from: [www.theguardian.com/society/2015/dec/22/almost-too-late-fears-of-global-superbug-crisis-in-wake-of-antibiotic-misuse](http://www.theguardian.com/society/2015/dec/22/almost-too-late-fears-of-global-superbug-crisis-in-wake-of-antibiotic-misuse) 22 December 2015. The Guardian [Accessed 20 January 2016]
- (120) FAO. 2011. Farm animals consumer nearly half of all the antibiotics produced worldwide [online] Available from: [www.fao.org/ag/againfo/themes/animal-welfare/newsdetail/en/c/94981/](http://www.fao.org/ag/againfo/themes/animal-welfare/newsdetail/en/c/94981/) [Accessed 20 January 2016]
- (121) FOE. 2013. Meat – a looming antibiotic crisis? [online] Available from: [www.foe.co.uk/news/meat\\_looming\\_antibiotic\\_crisis\\_41245](http://www.foe.co.uk/news/meat_looming_antibiotic_crisis_41245) [Accessed 20 January 2016]
- (122) Pigott R. 1998. Pig farmers warn of desperate times [online] Available from: [www.news.bbc.co.uk/1/hi/uk\\_politics/229939.stm](http://www.news.bbc.co.uk/1/hi/uk_politics/229939.stm). 7 December 1998. BBC News [Accessed 20 January 2016]
- (123) Doward J. 2011. Pig farmers warn of pork price rise as their feed costs soar [online] Available from: [www.theguardian.com/business/2011/feb/13/british-pig-farm-crisis-threatens](http://www.theguardian.com/business/2011/feb/13/british-pig-farm-crisis-threatens). 13 February 2011. The Observer [Accessed 2 February 2016]
- (124) Mchugh J. 2015. Agricultural crisis in France: Farmers block highways, set pigs loose in supermarkets to protest market conditions [online] Available from: [www.ibtimes.com/agricultural-crisis-france-farmers-block-highways-set-pigs-loose-supermarkets-protest-2030062](http://www.ibtimes.com/agricultural-crisis-france-farmers-block-highways-set-pigs-loose-supermarkets-protest-2030062). 29 July 2015. International Business Times [Accessed 2 February 2016]
- (125) Robinson J. 2015. Live pigs are dumped in supermarkets and Lyon blockaded as protesting French farmers cause more chaos [online] Available from: [www.dailymail.co.uk/news/article-3172090/Live-pigs-dumped-supermarkets-Lyon-blockaded-protesting-French-farmers-cause-chaos.html](http://www.dailymail.co.uk/news/article-3172090/Live-pigs-dumped-supermarkets-Lyon-blockaded-protesting-French-farmers-cause-chaos.html). 23 July 2015. The Daily Mail [Accessed 2 February 2016]
- (126) Jannic-Cherbonnel. 2015. Why is the French industry in crisis? [online] Available from: [www.english.rfi.fr/france/20150814-why-french-pork-industry-crisis](http://www.english.rfi.fr/france/20150814-why-french-pork-industry-crisis). 14 August 2015. RFI English [Accessed 2 February 2016]
- (127) Gyton G. 2015. Global Meat News. 2015. Russia set to do U-turn on EU pork ban [online] Available from: [www.globalmeatnews.com/Industry-Markets/Russia-set-to-do-U-turn-on-EU-pork-ban](http://www.globalmeatnews.com/Industry-Markets/Russia-set-to-do-U-turn-on-EU-pork-ban). 19 January 2015. Global Meat News [Accessed 2 February 2016]
- (128) Doward J and Cornish A. 2016. Cheap imports force UK pig farmers out of business [online] Available from: [www.theguardian.com/environment/2016/jan/16/cheap-imports-hit-pig-farmers](http://www.theguardian.com/environment/2016/jan/16/cheap-imports-hit-pig-farmers). 16 January 2016. The Guardian [Accessed 2 February 2016]
- (129) Rousseau O. 2015. EU ministers told to stop pig crisis [online] Available from: [www.globalmeatnews.com/Industry-Markets/EU-ministers-told-to-stop-pig-crisis](http://www.globalmeatnews.com/Industry-Markets/EU-ministers-told-to-stop-pig-crisis). 17 November 2015. Global Meat News [Accessed 2 February 2016]
- (130) Driver A. 2015. UK farmers to receive 36 million euros under 420 million euros EU aid package [online] Available from: [www.fginsight.com/news/uk-farmers-to-receive-36-million-under-420m-eu-aid-package-6228](http://www.fginsight.com/news/uk-farmers-to-receive-36-million-under-420m-eu-aid-package-6228). 15 September 2015. FG Insight [Accessed 2 February 2016]
- (131) Driver A. 2015. Farmers and agricultural leaders descend on Brussels for day of protests [online] Available from: [www.fginsight.com/news/farmers-and-agricultural-leaders-descend-on-brussels-for-day-of-protests-6009](http://www.fginsight.com/news/farmers-and-agricultural-leaders-descend-on-brussels-for-day-of-protests-6009). 7 September 2015. FG Insight [Accessed 2 February 2016]
- (132) Love Pork. 2016. [online] Available from: [www.lovepork.co.uk](http://www.lovepork.co.uk) [Accessed 2 February 2016]
- (133) Campaign. 2012. Pork welfare claim was ham-fisted, rules ad watchdog [online] Available from: [www.campaignlive.co.uk/news/1147415](http://www.campaignlive.co.uk/news/1147415) [Accessed 2 February 2016]
- (134) The pig site. 2011. Copa-cogeca warns of EU meat market share loss [online] [Available from: [www.thepigsite.com/swinenews/25583/copacogeca-warns-of-eu-meat-market-share-loss](http://www.thepigsite.com/swinenews/25583/copacogeca-warns-of-eu-meat-market-share-loss) [Accessed 2 February 2016]
- (135) Red Tractor Assurance for farms, pig scheme. Pig standards. 1 October 2014. [www.assuredfood.co.uk/resources/000/965/986/PIGS\\_standards\\_ONLINE.pdf](http://www.assuredfood.co.uk/resources/000/965/986/PIGS_standards_ONLINE.pdf) [Accessed 12 February 2016]
- (136) Mullin G. 2015. [www.dailymail.co.uk/news/article-3274762/Shocking-footage-reveals-pigs-crammed-tiny-cages-left-shivering-floor-farm-supplies-Morrisons.html](http://www.dailymail.co.uk/news/article-3274762/Shocking-footage-reveals-pigs-crammed-tiny-cages-left-shivering-floor-farm-supplies-Morrisons.html). 24 October 2015. The Daily Mail [Accessed 18 April 2016]
- (137) Soil Association. 2015. Organic animals. Pigs. [www.soilassociation.org/whatisorganic/organicanimals/pigs](http://www.soilassociation.org/whatisorganic/organicanimals/pigs) [Accessed 12 February 2016]
- (138) Soil Association. 2009. Organic pig production: An introductory guide. August 2009 [www.soilassociation.org/LinkClick.aspx?fileticket=3zr5-i2tpWl%3d&tabid=133](http://www.soilassociation.org/LinkClick.aspx?fileticket=3zr5-i2tpWl%3d&tabid=133) [Accessed 12 February 2016]
- (139) Soil Association. 2014. Soil Association organic standards. November 2014 [www.soilassociation.org/LinkClick.aspx?fileticket=LqUg6illo%3d&tabid=353](http://www.soilassociation.org/LinkClick.aspx?fileticket=LqUg6illo%3d&tabid=353) [Accessed 12 February 2016]





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