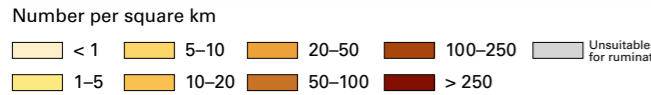
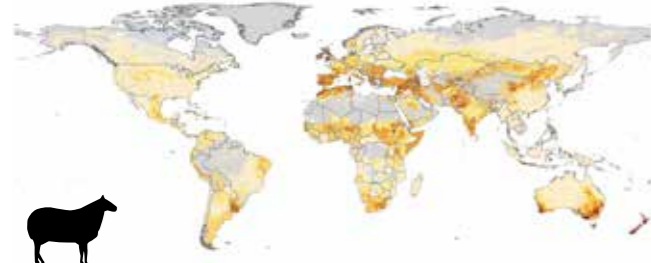


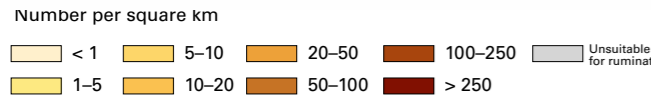
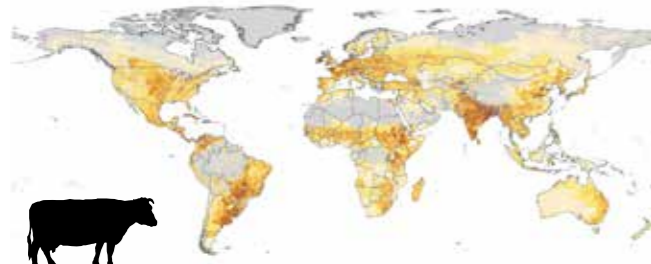
# FOOD PRODUCTION: LIVESTOCK

## LIVESTOCK DENSITY MAP www.fao.org

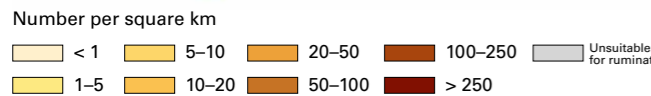
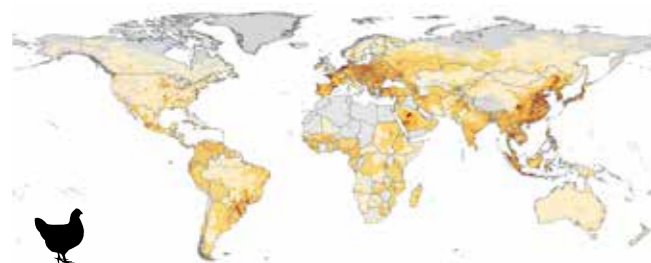
Sheep density map



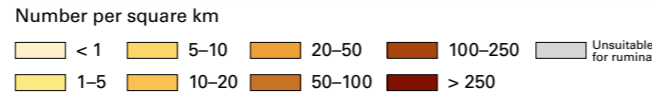
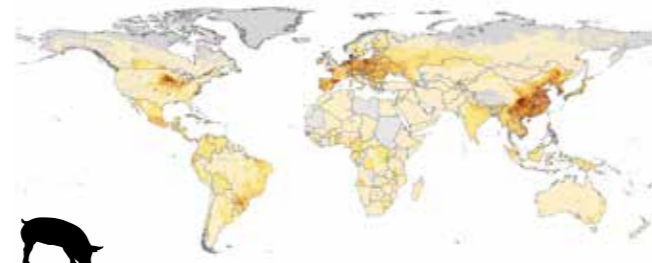
Cattle density map



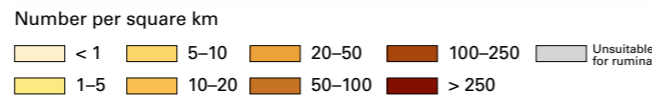
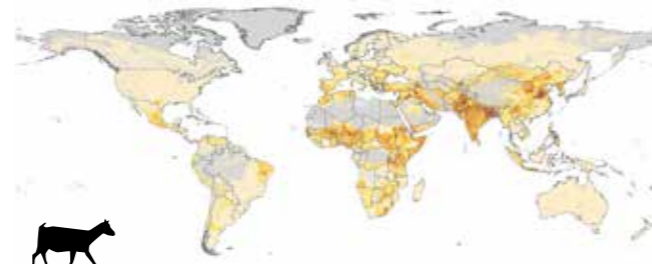
Poultry density map



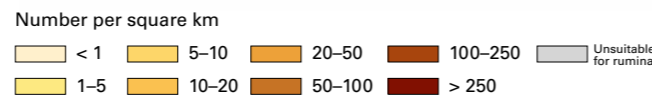
Pigs density map



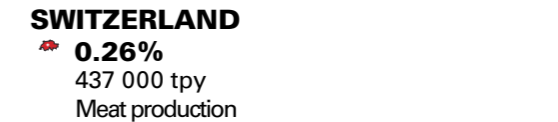
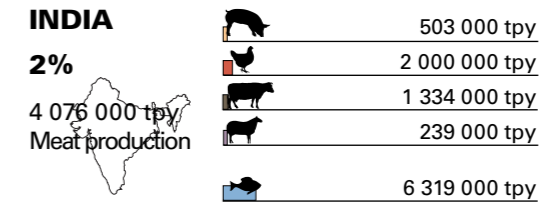
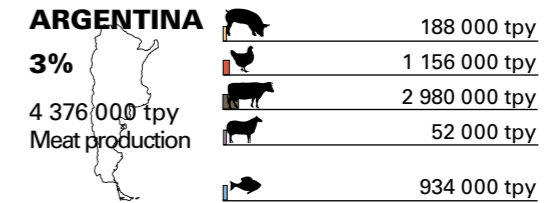
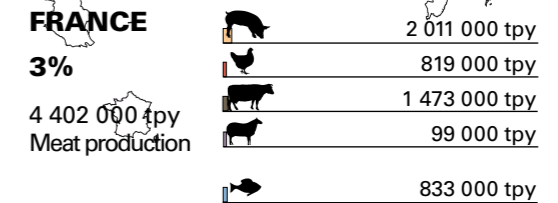
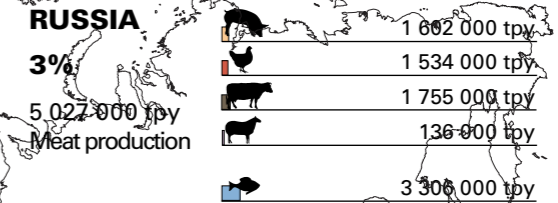
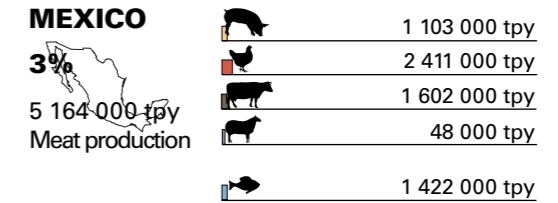
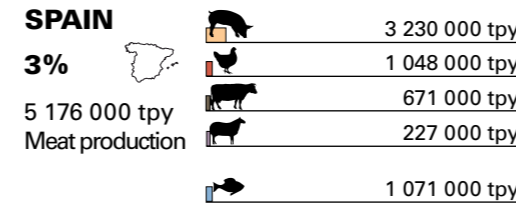
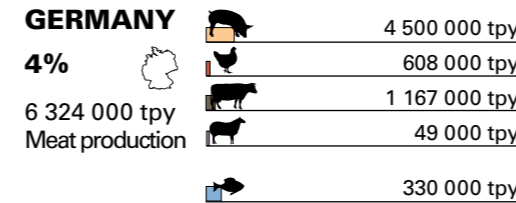
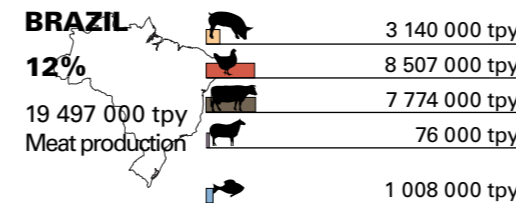
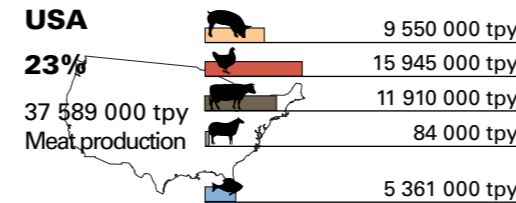
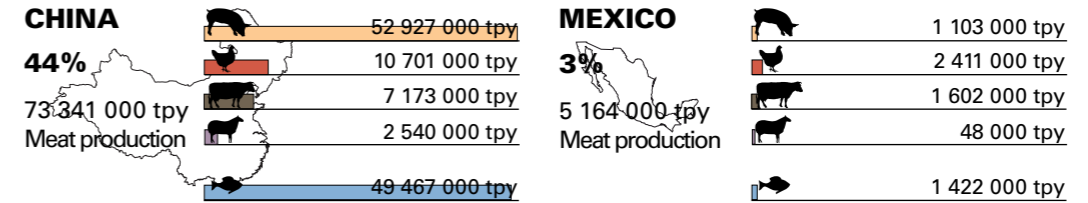
Goats density map



Buffaloes density map



## GLOBAL MEAT PRODUCTION: TOP TEN www.fao.org

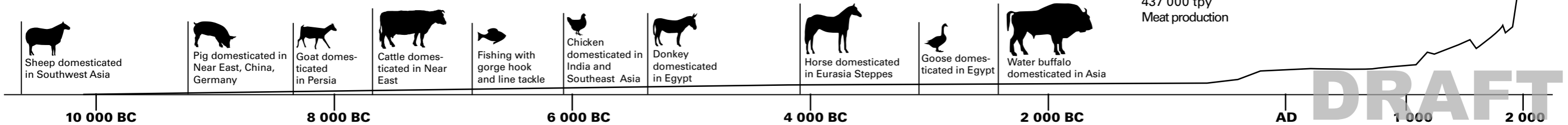


## WORLD POPULATION



### The largest meat consumers:

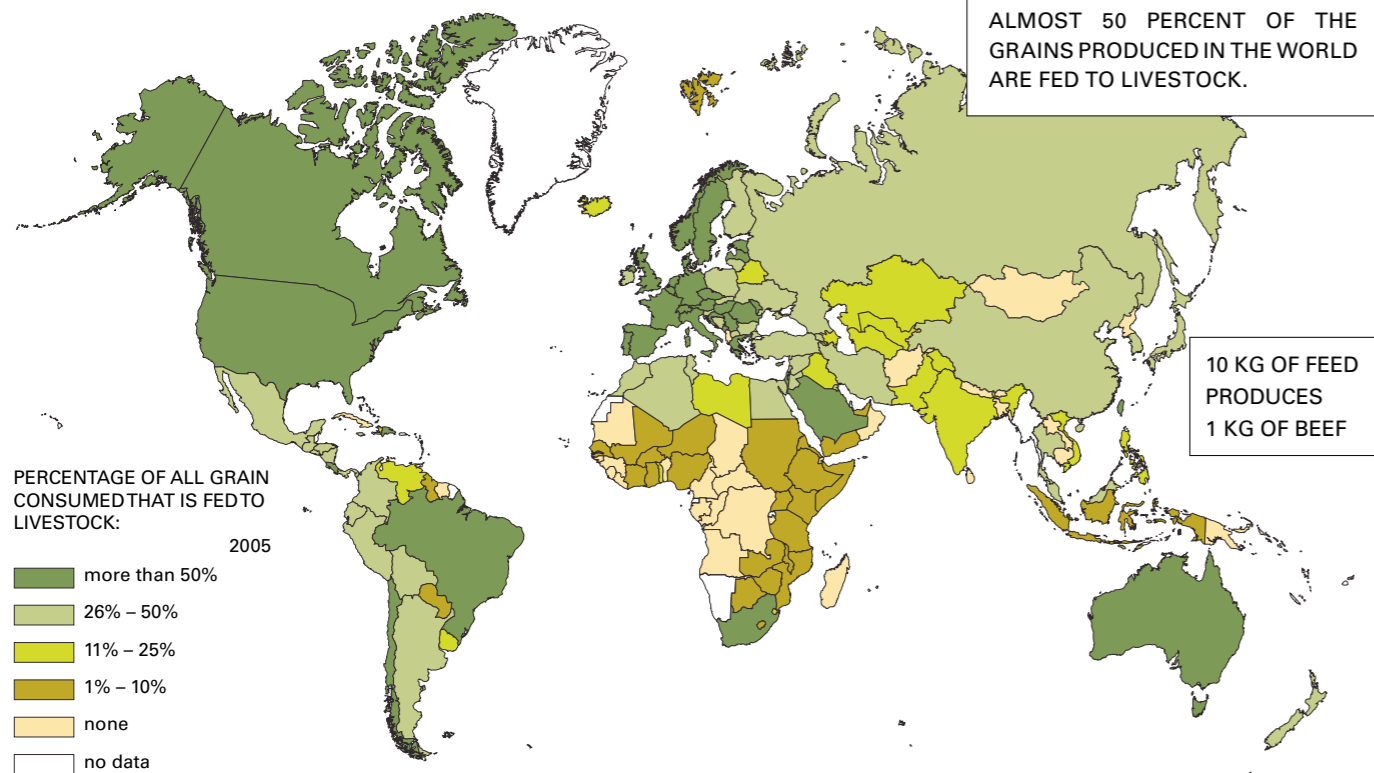
Country	Consumption per capita (in kg)
United States	123
Spain	121
Australia	118
Austria	112
Denmark	111
New Zealand	109
Cyprus	108
Ireland	102
Canada	98
France	98
Switzerland	73



**DRAFT**  
© ETH Studio Basel

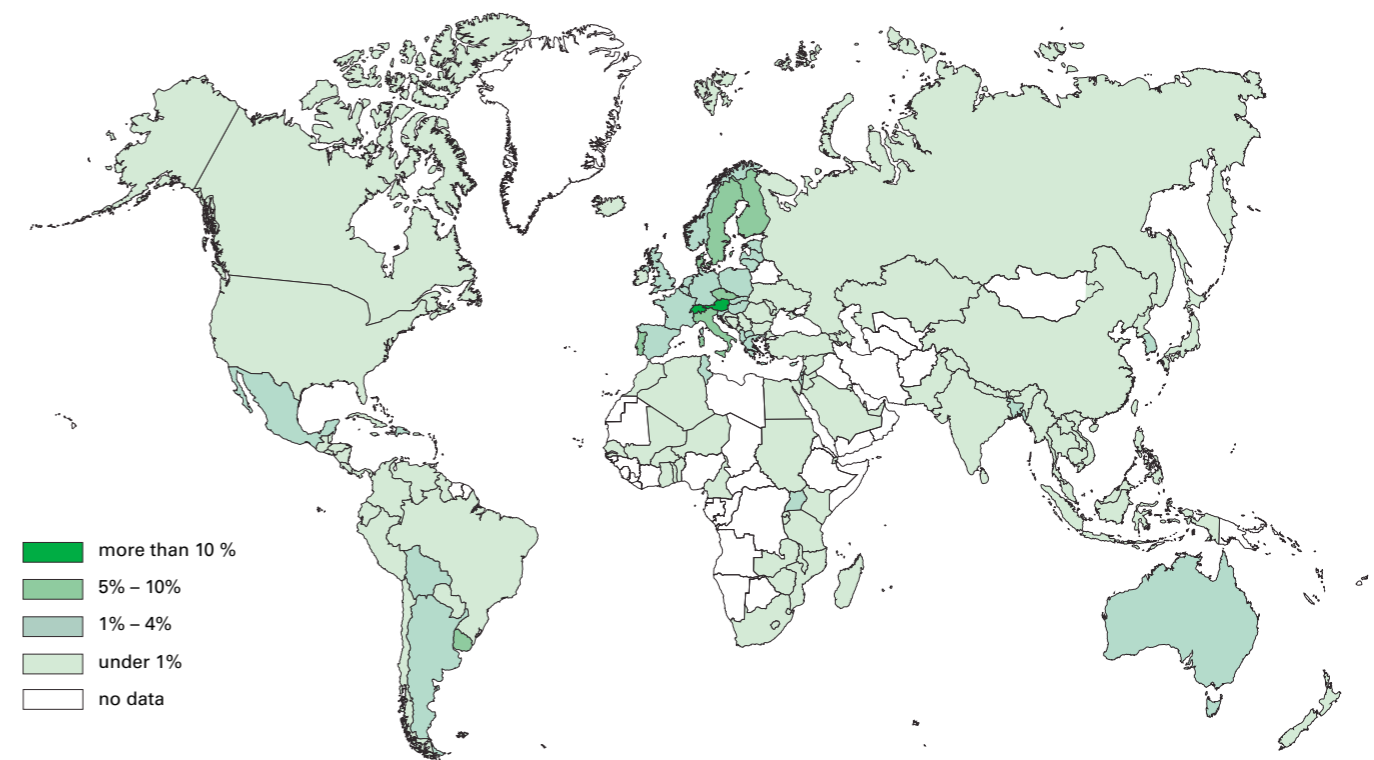
## GRAIN FED TO ANIMALS

www.fao.org



## ORGANIC FARMING

www.fao.org



## WATER USE

3 000 LITRES: 1KG RICE



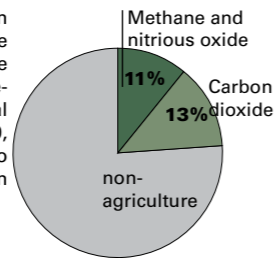
15 000 LITRES: 1KG BEEF



## GREENHOUSE GAS EMISSIONS

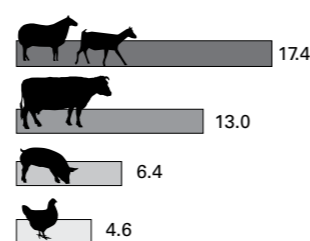
Agriculture of percentage of total (2007)

About 80 million tons of methane a year enters the atmosphere because of animal digestion. In 2030, it is expected to rise to 128 million tons.



## GLOBAL WARMING POTENTIAL

kg of CO<sub>2</sub> equivalents per kg of product (2006)



## ORGANIC LIVESTOCK FARMING



Organic livestock production requires that animals be fed organic feed, have access to pasture or the outdoors, and prohibits the use of antibiotics and hormones. Organic livestock must be under organic management for a specific period of time, usually the entire life of the animal. Organic livestock operators must maintain or improve soil and water quality and provide living conditions and health care practices that meet organic standards.

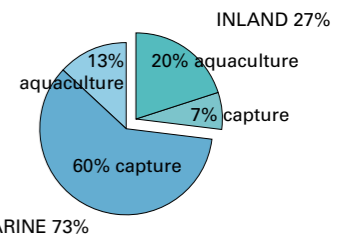
## FACTORY FARMING



Factory farming is a term referring to the process of raising livestock in confinement at high stocking density, where a farm operates as a factory – a practice typical in industrial farming by agribusinesses. The main product of this industry is meat, milk and eggs for human consumption. Confinement at high stocking density is one part of a systematic effort to produce the highest output at the lowest cost by relying on economies of scale, modern machinery, biotechnology, and global trade.

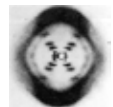
## FISHING AND AQUACULTURE

Fish production 2006  
Total: 142 million tonnes



## SCIENCE AND TECHNOLOGY IN LIVESTOCK PRODUCTION

1953  
discovery of DNA structure



1961  
Green Revolution



Intensive breeding and selection led to the development of high-yielding varieties of crops and more productive breeds of livestock.

1972 - Paul Berg and Genetic Engineering



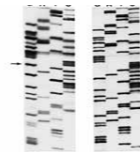
Livestock could, in theory, be genetically altered to give maximum output at minimum cost to farmers. Cows could be engineered for high milk production or high meat output, depending on their intended function.

1980  
Industrial agriculture



Intensive livestock operations, can hold large numbers of animals, often indoors. The aim of the operation is to produce as much meat, eggs, or milk at the lowest possible cost and with the greatest level of food safety.

1988  
directed mutation hypothesis



Scientists are always searching for genes coding for enzymes and proteins that can be profitably spliced into livestock and crops. These genes confer disease resistance and tolerance of pollution, and often increase the lifespan of livestock.

1996  
Dolly the Sheep



As it is still very expensive to clone animals at present, they are not simply used for consumption

2010  
synthetic life



2011  
In vitro meat

In vitro meat, is an animal flesh product that has never been part of a complete, living animal. It has been described, sometimes derisively, as "laboratory-grown" meat.

1960

1965

1970

1975

1980

1985

1990

1995

2000

2005

2010

2015

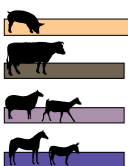
## LIVE ANIMAL TRANSPORT

www.fao.org

### REASON FOR LIVE ANIMAL TRANSPORTS:

- \_Agricultural subsidies of the European Union
- \_Specialisation of the industrial agriculture
- \_Centralisation of slaughtering facilities
- \_Ritual slaughtering and meat preferences

www.animals-angels.de



### TRANSPORT AND SLAUGHTER

Animals are hauled to slaughter for many hours without food, water, or rest, while exposed to extreme temperatures. Many die in transit, and those too sick or injured to walk are dragged with chains to the kill floor.

www.farmusa.org



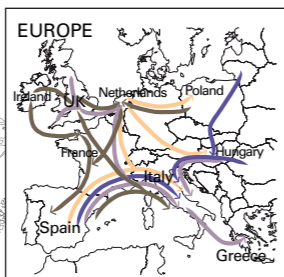
Livestock ships can carry up to 100 000 animals for voyages lasting up to **3 weeks**.

Goats from Namibia to South Africa — **2 to 5 days**, 600 to 1,200 miles by road.

Canada to Hawaii: Pigs transported for **9 days**.

Spain to Italy: Horses driven for **46 hours** before slaughter.

Cattle are exported from South Africa to Mauritius on sea journeys of **7 to 10 days**.



**GENERAL CONDITIONS FOR THE TRANSPORT OF ANIMALS IN EUROPE:**  
No person shall transport animals or cause animals to be transported in a way likely to cause injury or undue suffering to them.

Official Journal of the European Union; Article 3  
COUNCIL REGULATION (EC) No 1/2005

## ANIMAL DISEASES

Measures to prevent or control livestock diseases:

www.fao.org  
www.oie.int

- \_Vaccination
- \_Veterinary drugs
- \_Deterring device
- \_Mass culling

Transmissible diseases that have the potential for very serious and rapid spread:

- Influenza A virus H5N1
- Foot and mouth
- Bluetongue
- Swine fever
- Sheep and goat pox
- Contagious bovine pleuropneumonia



Contagious bovine pleuropneumonia (CBPP - also known as lung plague), is a contagious bacterial disease that afflicts the lungs of cattle, buffalo, zebu, and yaks.

Foot-and-mouth disease is an infectious and sometimes fatal viral disease that affects cloven-hoofed animals, including domestic and wild bovids. Humans can be infected with foot-and-mouth disease through contact with infected animals.

Bluetongue disease is a non-contagious, non-zoonotic, insect-borne, viral disease of ruminants, mainly sheep and less frequently cattle, deer, dromedaries and antelope. It is caused by the Bluetongue virus (BTV).

Sheep and goat pox is an exanthemous disease caused by a parapox virus. Humans can contract this disorder through direct contact with infected sheep and goats or with fomites carrying the virus.

Classical swine fever (CSF) is a highly contagious disease of pigs and wild boar. Swine fever causes fever, skin lesions, convulsions and usually death within 15 days.

In 2001 10 million farm animals, including 700,000 cattle, were slaughtered at a cost of about 12,7 billion.



## ANIMAL DISEASES AND ACCIDENTS

www.oie.int

**1987 – 2007**  
BSE was first recognised and defined in the United Kingdom (UK) in November 1986. From 1987 to 2007, the UK has reported more than 180,000 cases of BSE accounting for 97% of all cases reported throughout the world.

**1992 – 2006**  
The implementation of appropriate control measures resulted in the decline of BSE worldwide from 37,000 cases in 1992 to fewer than 300 in 2006.

**1993**  
African swine fever was eradicated from Portugal and Spain in 1995.

**1995**  
An outbreak of contagious bovine pleuropneumonia (CBPP) was detected in Botswana, after more than half a century of freedom from the disease.

**1997**  
An outbreak of the Classical Swine Fever in the Netherlands, led to the destruction of 11 million pigs and cost US\$ 2.3 billion.

**1998**  
Bluetongue has been spreading northward since October 1998, perhaps as a result of global warming, which may promote viral survival and vector longevity during milder winters.

**2001**  
An outbreak of Foot-and-mouth disease was confirmed in pigs in the United Kingdom. A total of 2030 outbreaks affecting sheep, cattle, goats and pigs were reported. Over 4 million animals were slaughtered as part of the disease control efforts.

**2003**  
50,000 sheep has been stranded for two months after a mechanical breakdown on the ship Cormo Express, on the way from Australia to the Middle East. More than 5600 sheep died.

**2005**  
In January 2005 an outbreak of H5N1 affected thirty three out of sixty four cities and provinces in Vietnam, leading to the forced killing of nearly 1.2 million poultry. Up to 140 million birds are believed to have died or been killed because of the outbreak.

**2007**  
The Swiss veterinary authorities have registered the first case of bluetongue disease in the country, after cows were infected near Basel.

**2009**  
A report of three incursions of Foot-and-mouth disease in Japan led the FAO to issue a call for increased global surveillance.

**2011**  
Cases of MRSA have increased in livestock animals. MRSA has emerged in animals and is found in intensively reared production animals, where it can be transmitted to humans. A 2011 study reported 47% of the meat and poultry sold in surveyed U.S. grocery stores was contaminated with S. aureus and, of those, 52% were resistant to at least three classes of antibiotics.

1990

1992

1994

1996

1998

2000

2002

2004

2006

2008

2010

2012