

BSE SITUATION IN SWITZERLAND: MAY 1996

Statement Made by Switzerland at the Meeting
of 29-30 May 1996

The BSE situation

On 2 November 1990, the first BSE case was diagnosed. By 15 May 1996, the number of BSE-affected cattle amounted to 214 (Figure 1). All animals concerned were dairy cows born in Switzerland between 1984 and 1991.

Annual incidence rate: The course of the epidemic showed an exponential development for the years 1991 through 1994; compared to the respective previous years. In 1995, the annual incidence rate remained nearly as low as in 1994 and the gradient of the incidence rate curve approached zero (Table 1). It indicates that the peak of the epidemic has either been passed already or will be so in the very near future (Figure 1).

Geographical distribution: The cases were distributed over the country.

Age: The average age at the time of killing of affected animals is 5.2 years. Approximately 85 per cent of all affected animals are between four and six years old. The youngest affected cow was 2.6 years old and the oldest 10.2 years old. The average age of affected animals is increasing since 1992 (Table 2). Taking into consideration an incubation period of approximately five years, this trend shall probably continue since the part of the population at risk which was born before 1 December 1990, when the feed ban was put into effect, is steadily declining.

Breed: A comparison of the breeds to which the affected animals belong with the proportion of these breeds in the dairy cattle population allows the assumption that no breed predisposition exists.

Number of cases in affected herds: Only one case of BSE was reported in 200 out of a total of 206 affected herds. Two cases were recorded on six farms and one farm had three cases.

Herd size: The average herd size of the BSE affected farms at the time of diagnosis consisted of 19 adult dairy cows in the stage of production; this is slightly higher than the average Swiss dairy cattle herd size.

Purchase: Approximately 70 per cent of all affected animals were home-bred and 30 per cent of the animals were traded between once and five times during their lifetime.

BSE risk factors and risk population

The Swiss sheep population (~400,000) compared to the dairy cattle population indicates a relative *sheep density* of approximately 0.5. In 1990, the dairy cattle population amounted to a total of ~800,000 animals; they were defined as the *population at BSE risk*.

The first case of scrapie was reported in 1982; since then, five further cases have been reported (one case in 1991, three in 1993, and one in 1995). Thus, this BSE *risk factor* should be of no or only of minor importance.

The Swiss dairy cattle population was, up to 30 November 1990, exposed to feed concentrates, to which animal proteins were legally added. They contained approximately 2.6 per cent of meat and bone meal. Some feed concentrates might have contained a higher percentage of meat and bone meal (up to 7 per cent).

A radical change in meat and bone meal production techniques including reduced temperatures during the sterilization process did *not* take place. Swiss animal waste-derived protein had to be produced at 120 or 130° C prevailing for 30 or 20 minutes, respectively, at 3 bar until 1993 and at 133° C prevailing for 20 minutes at 3 bar since 1993.

In summary, from the risk factors known to be important (existence of scrapie, high density of sheep population, inappropriate technology for the production of meat and bone meal and feeding of meat and bone meal to cattle), only the last mentioned factor was of importance. Our risk assessment has furthermore shown evidence that the occurrence of BSE probably goes back to imports of potentially contaminated British feed compounds. The major part of this feed compound imports seem to have been traded via France, Belgium and Germany and were not imported from Great Britain directly.

BAB cases

As of 15 May 1996, 10 animals born after the feed ban (1 December 1990) were affected with BSE (so-called BAB cases = *Born After the Ban*). Five of these 10 animals were born in the period from December 1990 to February 1991 and five in the period from October to December 1991.

There are *no* indications suggesting that meat and bone meal was illegally added to the cattle feed concentrates ingested by the affected BAB cases which have been analysed so far. On the other hand, the mothers of these animals were never suspected to be infected with BSE, i.e. there are no indications suggesting vertical transmission. The question whether the BSE prion can be transmitted from the cow to the unborn or newborn calf (so-called "*vertical transmission*") remains open.

If an infection route "mother → young animal" exists - as it does with scrapie - this could mean that the anti-BSE measures will *not* lead to an ultimate success (i.e. zero incidence) in the near future. However, it is conclusive from British experiments (organ infectivity tests) on placenta (cotyledons), amniotic liquid and lochia that the afterbirth tissues and liquids from BSE-affected animals contain no measurable infectivity. Therefore the vertical route of transmission seems to be of no theoretical importance.

Implemented public health and animal health measures

Surveillance

- ⇒ Establishing an efficient surveillance system with two diagnostic laboratories (since 1990);
- ⇒ Obligation to notify BSE suspects: this applies basically to everybody but specifically to professionals such as farmers, veterinarians, truck drivers (livestock transportation), live animal and meat inspectors, and laboratories (since 1 December 1990);
- ⇒ Killing and histological examination of clinically suspect cases (Table 3);
- ⇒ Examination and registration of all cattle on BSE-affected farms;
- ⇒ Extensive epidemiological investigation on BSE-affected farms and involved feedmills;

- ⇒ Tattooing of all progeny of BSE-affected cattle with the letters "BSE" in the left ear (since 1 December 1990).

Disease control

- ⇒ Ban on feeding animal waste-derived protein to ruminants (since 1 December 1990);
- ⇒ Burning of carcasses of BSE-affected cattle (since 1 December 1990);
- ⇒ Elimination of semen, eggs and embryos of BSE-affected cattle;
- ⇒ Removal and appropriate rendering of visible nerves and lymphatic tissue and of the specified bovine offals (SBO): brain, spinal cord, thymus, spleen, and bowels of cattle older than six months of age (since 1 December 1990);
- ⇒ Burning of skull (brain, eye) and spinal cord of all cows slaughtered (since 1 May 1996).

Preventative consumer protection

- ⇒ Prohibition on selling to consumers milk of suspect cases;
- ⇒ Prohibition on selling to consumers specified bovine offals (SBO) such as brain, spinal cord, thymus, spleen, and bowels of cattle older than six months of age [the tonsils were confiscated already beforehand, i.e. out of the context of BSE];
- ⇒ Declaration of the origin of any meat and meat product sold to consumers (since 1 May 1996);
- ⇒ Pharmaceuticals containing components originating from SBOs were withdrawn from the market: taking into account a possible, theoretical residual risk of BSE transmission to humans, the Intercantonal Control Authority for Drugs (Interkantonale Kontrollstelle für Heilmittel, IKS) implemented restrictive regulations on drug registration.

Import ban on ...

- ⇒ Living animals from cattle species of British origin (since June 1990);
- ⇒ British beef (since June 1990);
- ⇒ Animal waste-derived protein of British origin (since June 1990);
- ⇒ Animal waste-derived protein, except if the rendering plant in the exporting countries treat the raw material with the same procedures like the Swiss producers have to (130° C prevailing for 20 minutes at 3 bar), *and* if the new conditions (since 1 May 1996) are fulfilled, i.e. spinal cord and head of cows are not incorporated into the raw material.

Feed ban control

As the elimination of the major risk factor was the most important goal, the implementation of the feed ban has been controlled strictly since 1991. Regular laboratory analyses of cattle feed concentrates are carried out by the Swiss Federal Research Station for Animal Production (Forschungsanstalt für viehwirtschaftliche Produktion, FAG) in Posieux and ensure that the prohibition of adding animal waste-derived protein to ruminant feeds is respected.

As revealed by the random laboratory check-up of ruminant feed concentrates, the feed ban has been implemented shortly after it was put into effect. Between 1991 and 1994, out of 544 analysed samples three contained a minor concentration of meat and bone meal (below 0.3 per cent).

Summary and conclusion

Since BSE was diagnosed for the first time on 2 November 1990 in Switzerland, 214 cases were recorded. The feedban for animal waste-derived protein was put into effect on 1 December 1990, and it was immediately implemented as laboratory controls have shown. It is of importance to note,

that, since carcasses of BSE-affected animals were burnt, and in addition, since the feedban was respected, no BSE-affected cattle have been recycled in the Swiss cattle population.

In 1995, it could be observed for the first time that the gradient of the incidence rate curve was decreasing clearly. The peak of the epidemic curve (postulated for 1995 or 1996) and the development of the incidence rate over the period of the past five years are in accordance with our expectations calculated in 1991/1992.

Figure 1:

Distribution by time of BSE cases in Switzerland (as of 15 May 1996)

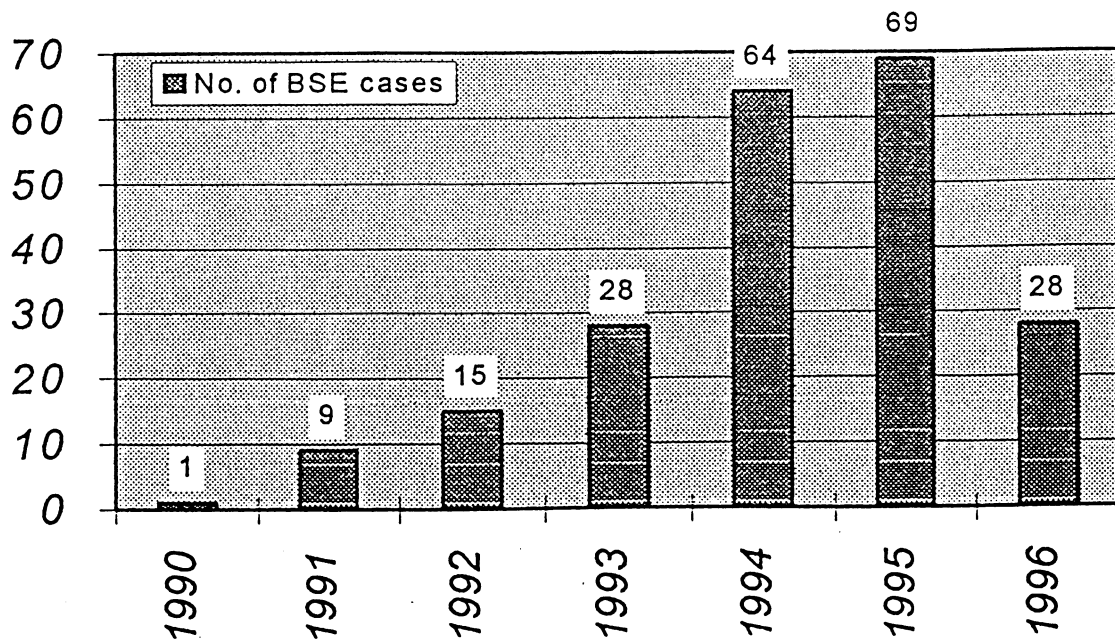


Table 1

Number of BSE cases per year in Switzerland and of the annual BSE incidence rate (IR; referring to the time of diagnosis). The annual IR were divided by the respective incidence rate of the previous year ($\rightarrow \delta$).

Year	Number of cases per year	IR per 10 ⁵ dairy cattle	Gradient of IR (δ)
1987	0	0.0	-
1988	0	0.0	-
1989	0	0.0	-
1990	1	0.13	n.a.
1991	9	1.16	n.a.
1992	15	1.95	0.7
1993	28	3.67	0.9
1994	64	8.41	1.3
1995	69	9.03	0.1
1996	28*	9.97**	0.1

$$\delta = \frac{IR_{Jahr}}{IR_{Jahr-1}} - 1 \quad (\text{gradient of the incidence rate curve})$$

n.a. Not available.

* As of 15 May 1996.

** Extrapolated to the end of the year, assuming 6.35 BSE cases per month.

Table 2

Average age in years of BSE-affected cows from 1990 to 1996 (age at the time of killing)

Age in years Cohort	Average	Minimum	Maximum
Cows affected in 1990	4.7	4.7	4.7
Cows affected in 1991	5.0	3.7	5.5
Cows affected in 1992	4.8	3.6	8.0
Cows affected in 1993	4.9	2.6	8.9
Cows affected in 1994	5.0	3.8	7.1
Cows affected in 1995	5.3	3.5	7.5
Cows affected in 1996*	6.0	4.3	10.2

* As of 15 May 1996.

Table 3

An appropriate surveillance system guarantees that all clinical suspects are examined histopathologically for BSE.

Year	Number of suspects	Number of BSE cases	% confirmed
1991	113	9	8.0
1992	57	15	26.3
1993	78	28	35.9
1994	124	64	51.6
1995	111	69	62.7
Total	483	185	38.3*

* Average.