

Report on
the Assessment of
the Geographical BSE-Risk
(GBR) of
COLOMBIA

NOTE TO THE READER

Independent experts have produced this report, applying an innovative methodology by a complex process to data that were voluntarily supplied by the responsible country authorities. Both, the methodology and the process are described in detail in the final opinion of the SSC on "the Geographical Risk of Bovine Spongiform Encephalopathy (GBR)", 6 July 2000. This opinion is available at the following Internet address:

<http://europa.eu.int/comm/food/fs/sc/ssc/outcome_en.html>

In order to understand the rationale of the report leading to its conclusions and the terminology used in the report, it is highly advisable to have read the opinion before reading the report. The opinion also provides an overview of the assessments for other countries.

FULL REPORT

1. DATA

- The available information was suitable to finalise the GBR risk assessment.

Sources of data

Country Dossier consisting of:

- Answers to the questionnaire on geographical BSE risk assessment, received on 6 November 2000, no annexes.
- Clarifications and comments on the draft report for the assessment of the Geographical BSE-risk for Colombia sent by the authorities on 12 January 2001.
- Comments on the draft final report for the assessment of the Geographical BSE-risk for Colombia sent by the authorities on 20 February and 27 March 2001.

Other sources:

- EUROSTAT data on exports of "live bovine animals" and of "flour, meal and pellets of meat or offal, unfit for human consumption; greaves" from EU Member States, covering the period 1980 to 1999.
- UK-export data on "live bovine animals" (1980-1996) and on "Mammalian Flours, Meals and Pellets" (1980-2000). As it was illegal to export mammalian meat meal, bone meal and MBM from UK since 27/03/1996, exports indicated after that date may have included non-mammalian MBM.

2. EXTERNAL CHALLENGES

2.1 **Import of cattle from BSE affected countries**

- According to all data sources mentioned under point 1, no imports of live cattle occurred from UK.
- With regard to imports from other BSE-affected countries, the import data provided by the country are largely in line with the export data recorded in Eurostat, except for some imports from DE. The main imports originated from Spain (since 1994) and Germany (since 1987). Smaller imports have been registered from France, Belgium/Luxembourg and Austria (only 65 animals 1993).
- For the animals imported from Spain during the period 1994-1999, 204 animals were destined for bullfights. Of these, 49 animals have been incinerated and hence, did not enter the food and animal feed chain. The remaining 155 animals were after their death destined for beneficiary institutes and were completely consumed by humans. The country dossier states that none of these animals or their remains entered the animal feed chain. In November 2000, 79 breeding cattle were imported from Germany. These animals have been

quarantined and Resolution 0204/2001 has ordered destruction of these animals in the mean time. This has happened by incineration and none of these animals or their remains has entered the food and/or feed chain. This means that in total 283 live cattle imports did not enter the feed chain and hence they should not be considered as an external challenge. It remains 1006 animals that potentially entered the feed chain.

Import of live cattle (n/year) into <u>COLOMBIA</u> from BSE-affected countries										
Period	FR		BE/LUX		SP		DE		Non-UK	
<i>Source:</i>	CD	EU	CD	EU	CD	EU	CD	EU	CD	EU
1980										
1981										
1982										
1983	70	70								70
1984										
1985										
1986										
1987							315	330		330
80-87:	70	70					315	330	385	400
1988							123	580		580
1989			22	22			422	725		747
1990										
1991							54			
1992										
1993	8	8					76	27		35
88-93:	8	8	22	22			675	1332	770	1362
1994					193	191	120	125		316
1995					446	371	5	85		456
1996					144	134				134
1997					199	202	50	5		207
1998							4			
1999					49	63				63
94-99:					1031	961	179	215	1289	1176
					(827)				(1006)	

Table 1: Live Cattle imports. Shading indicates period of different risk that UK-exports carried the agent, 1988-1993 being the period of highest risk. Sources: CD = Country Dossier, EU = Eurostat, UK = Export data from UK. Figures between brackets are numbers of animals that entered rendering.

2.2 Import of MBM or MBM-containing feedstuffs from BSE affected countries

- According to the country data no imports of MBM have occurred from UK. Two reasons are given. The first is that in 1997, the Resolution 447 of the Andean Community Basic Catalogue of pests and exotic animal diseases was established which prohibits the import of animal products and sub-products that are held to be at risk as regards BSE. The second is that before 1997, the grounds for not importing such materials were likely economic in nature because of their high cost. Considering the registration of small amounts of

other imported products, border controls seem to be reliable and it can be assumed that imports would normally have been registered.

Import of MBM, MM, BM or greaves (t/year) into <u>COLOMBIA</u> from BSE-affected countries			
Period	UK		
<i>Source:</i>	CD	EU	UK
80-85			
86-90			
1991			
1992		21.3	21.3
1993			
91-93		21.3	21.3
94-99:			

Table 2: MBM-imports. Shading indicates period of different risk that exports carried the agent, 1986-1990 being the period of highest risk for UK imports while 1994-1999 UK-exports are assumed to have been safer than exports from other BSE-affected countries. Sources: CD = Country Dossier, EU = Eurostat, UK = UK-Export statistics.

- According to Eurostat and UK export data 21.3 tons of MBM have been exported from UK to Colombia in 1992. Colombia has not found any reference in their statistics to these MBM imports (checks performed by “el servicio de sanidad animal”, “Ministerio de Comercio Exterior” and “la Direccion de Impuestos Nacionales y de Aduanas Nacionales en el Incomex”). In any case the UK imports would only have been a negligible challenge. It is stated that no imports of these MBM commodities have taken place, neither from the UK nor from any other BSE-affected countries.
- The only imports from EU Member States registered by Colombia are from Spain and they concern products for human consumption. However, Eurostat has registered several MBM exports from Spain to Colombia, from 1994 onwards, for a total amount of 140 tons. This issue has been checked with Spain and it has been confirmed that these products were indeed destined for human consumption. Therefore these imports can be neglected.
- The country dossier states that a zoosanitary certificate accompanies every consignment upon import. Since 1997, the requisites in the Andean area have been harmonised by several Resolutions (449, 447). Since 6 December 2000, Resolution 3122 suspends the import of live bovine animals, their products and sub-products that can represent a risk for BSE transmission.

2.3 Overall assessment of the external challenge

The level of the external challenge that has to be met by the BSE/cattle system is estimated according to the guidance given by the SSC in its final opinion on the GBR of July 2000.

It appears that the external challenge resulting from live cattle imports has been negligible until 1987, and low thereafter. The fate of 283 of these cattle is known and they did not end up in the feed chain, but still 1006 cattle remain for which the fate is not documented. The worst case assumption applies that these indeed posed an external challenge.

The challenge resulting from the MBM imports is negligible throughout the whole period.

External Challenge experienced by <u>COLOMBIA</u>				
<i>External challenge</i>		<i>Reason for this external challenge</i>		
Period	Level	Cattle imports	MBM imports	Comment
1980-1987	Negligible	Negligible	Negligible	
1988-1993	Low	Low		Mainly due to live cattle imports from Germany
1994-1999				Due to live cattle imports from Spain

Table 3: External Challenge resulting from live cattle and/or MBM imports from the UK and other BSE-affected countries. The Challenge level is determined according to the SSC-opinion on the GBR of July 2000.

The overall external challenge is as indicated in Table 3, i.e. it is possible but not likely, that after 1988 the agent was introduced into Colombia by live cattle.

3. STABILITY

3.1 Overall appreciation of the ability to avoid recycling of BSE infectivity, should it enter processing

Feeding:

Since 6 March 2001 Colombia has enforced Resolution N° 0347/2001 by which the use of meat meal, blood meal, bone meal, meat and bone meal and greaves of mammals is prohibited for ruminant feeding (MMBM-ban).

In Colombia, cattle are kept extensively on pasture feeding. A very low proportion of hay and balanced feeds are used to supplement pasture, mainly for dairy cattle in highly specialised farms.

Feeding of MBM, BM, MM, greaves and/or feedstuffs containing any of these could take place in Colombia, as no feed ban was installed. However, they are not necessary in the feed formulation and they were only used at low levels: it is mentioned that 1.7-% of the total bovine cattle population (about 365,000 heads) could have had access to MBM. Moreover, according to the country dossier, if any MBM would have been used, it was of domestic origin. Greaves were considered unfavourable and were replaced by palm oil. The most commonly used product

was bone meal as mineral supplement, and all of it was domestically produced (36,000 tons in 1999 used for a mineral salt production of about 120,000 tons).

As no feed ban existed and 24% of the domestic cattle feed production contained animal protein, it is assumed that most cattle feed contained some animal protein, often of ruminant origin.

In 1999, 16700 tons of MBM and 5184 tons of MM have been produced while the domestic production of cattle feed is estimated at 445,266 tons. The country dossier clearly states that all of these commodities are either domestically produced or imported from neighbouring countries (Venezuela, Ecuador) and none were imported from EU.

Rendering:

Bovine raw material is rendered for feed, including confiscated and condemned materials. Animals that died in the pastures are buried on site. Animals that died during transport or are diseased do not enter rendering. Bovine material is not rendered together with raw material from other species (sheep, goats and poultry), but no information is provided whether MBM is produced in the same rendering plants. Therefore it has to be assumed that the MBM produced contains raw material from ruminants and other species.

It has to be assumed that the live cattle imported from EU (except for the 283 cattle that did not enter the feed chain) have been rendered as well and ended up in the Colombian feed chain.

Details on the rendering process parameters that are applied in the country are available for both BM and MBM.

The following parameters are used for the production of BM:

-Incineration to bone ash (“calcinadas”): 90 or 100 or 150°C for 3 hours, or 120°C for 6 hours.

-Heating under steam (“vaporizadas”): 130°C/6h/4.8 bar, or 150°C/1h/5.5 bar, or 150°C/3h/3.4 bar

The BM used in Colombia is produced domestically and is submitted for 95% to incineration. The resulting bone ash is used as mineral source.

The following parameters can be used for the production of MBM:

90°C/83h/4.8 bar	130°C/5h/6.2 bar
100°C/5h/5.5 bar	145°C/35min/4.8 bar
120°C/45 min/4.8 bar	150°C/3h/5.5 bar
121°C/6h/4.8 bar	

Since it is not clear what parameters are specifically used for the production of bovine MBM and because not all process parameters are equivalent to the EU standard, it is concluded that the rendering process would not always be able to reduce BSE-infectivity.

SRM and fallen stock

SRM (brains and spinal cord) from animals fit for human consumption are not rendered since they are destined for human consumption. SRM in condemned material or animals, or in animals "dead at arrival" are rendered.

Fallen stock is rendered for feed, as far as animals "dead at arrival" are concerned. Animals dying on farms are normally not rendered but buried on the farms, also diseased animals will not be brought to a slaughterhouse.

Cross-contamination:

There is no specific information in the country dossier on cross-contamination or on measures to prevent or control it. Animal materials from different species are not rendered together, but since no information is available on the type of rendering plant or feed mill, it is clear that feedstuffs can contain ruminant material. As no feed ban existed, cross-contamination was no issue and no measures were in place to avoid it. However, in 1997 Good Manufacturing Practices were installed in the Colombian animal feed production industry (manual is provided).

Conclusion on the ability to avoid recycling

It is assumed that the BSE agent, should it have entered the territory of Colombia, would have been recycled and amplified.

3.2 Overall appreciation of the ability to identify BSE-cases and to eliminate animals at risk of being infected before they are processed

Cattle population structure

In the period 1996-1999 the cattle population in Colombia was 22,669,956, and at present is 21,511,466 animals. Of these, 3,025,998 are male for beef production, and 159,263 are male for breeding. Of the female cattle 5,236,803 are for beef production and there are 3,639,133 dairy cows. No further details are provided in the country dossier.

The level of highly specialised dairy farms is restricted to 1.7% of the total cattle population (about 365,000 animals). The average milk yield is 10.5 litres per cow per day (about 2,500 kg per cow per year).

About 15% of the national farms practice co-species farming. According to the country dossier these producers do not use any supplemented feedstuffs.

Surveillance and culling

Notification of BSE has been compulsory since 1997 (Resolution 447, modified by Resolution 146 in 1998). Since 1982, the country has determined 9 notifiable diseases and a database on animal diseases is kept. BSE is one of the diseases showing clinical symptoms that have to be notified immediately and this has been obligatory since 1997.

The organisation of the national animal disease surveillance system is described in the country dossier as follows:

A BSE-suspect is indicated by one or more of the following clinical symptoms: ataxia, ptosis, moving in circles, bruxism, pedalling, opisthotonus, convulsions, paralysis, hyperexcitation, fury, priapism, blindness, nystagmus, protrusion of the third eyelid and eye movements.

Animals showing CNS symptoms are routinely examined histopathologically by the regional laboratories. Several brain tissues at different locations are sampled in order to carry out the differential diagnosis. Since 1998, 397 herds with a total population of 66,583 cattle (it is not clear whether it concerns bovines or sheep) have been assessed and 1,363 deaths with nervous symptoms have been reported. Within each herd one sample was taken for further diagnosis. In each herd 1-5 animals died and it was supposed that all animals died of the same cause. Differential diagnoses most frequently encountered were bacteriological, toxicological, virological or parasitological diseases, also metabolic disorders caused similar symptoms (table 4). Details on age, sex and type of cattle are not provided, nor whether the herds comprised the intensively reared dairy cattle most at risk to receive MBM. Nervous system tissues that are sent to the central reference laboratory have to contain the brain stem in order to make a differential diagnosis of BSE, which has been routinely executed since 1998.

Differential Diagnosis	Number of confirmed cases
Rabies	44
Encefalomalacia	49
Meningoencefalitis supurativa	14
Meningoencefalitis non-supuritiva	27
Secondary neuropathology	104
Cerebral emboli (B. bovis)	10
Malignant Cattharal Fever	1
Autolysis	24
No nervous lesions	122
Total	397

Table 4: Differential diagnosis of the 397 cattle showing nervous symptoms.

No nervous lesions indicating the presence of BSE have been detected and hence no samples have been sent to the central reference laboratory so far. In case such a suspicion arose, samples would be sent to Weybridge (UK). It is clear that the amount of samples examined up to now is below the OIE requirements. According to the cattle population over 24 months, the number of samples is estimated to be at least 367 annually.

Awareness / training measures are in place since 1998. The “Coordinaciones Epidemiologicas Regionales” are responsible for detecting the emergencies, and they have been trained on sampling and handling of samples. In relation to BSE several training sessions have taken place concerning the disease characteristics, transmission, sampling and diagnostics.

Farmers are recompensed for BSE-suspects or animals culled in that context (this was the case for the animals imported from Germany in 2000).

During 2001 a surveillance system will be established including the following measures:

- Collection of additional information in those herds which could have been at risk of infection with BSE (due to feeding practices or to imports of animals, etc....)
- Tracing and follow-up of live cattle imported from Europe since 1980, whilst establishing specific legislation on their final destination in order to prevent these cattle from entering the feed and food chain.
- Sampling in the Colombian slaughterhouses with special emphasis on dairy cattle over 24 months of age.
- Updating of legislation especially with regard to live cattle imported from Europe and modification of the sanitary conditions for the issuance of import permits.
- Establishing a training program on the disease in general for pathologists and epidemiologists as well as for all other people involved in order to enhance epidemiological surveillance and reporting and sampling of CNS-suspects.

More concrete information on the content of the planned measures is not provided.

3.3 Overall assessment of the stability

For the overall assessment of the stability, the impact of the three main stability factors and of the additional stability factors, mainly cross-contamination and surveillance plus culling, has to be estimated. Again the guidance provided by the SSC in its opinion on the GBR of July 2000 is applied.

Feeding: Feeding of cattle with MBM was allowed. About one fourth of the cattle feed contained MBM and the intensively reared dairy cattle (365,000 heads) are most at risk. Feeding was therefore seen to be "not OK". Since March 2001 an MBM-ban has been installed. In the future, pending the implementation of feed controls and their favourable results, this stability factor could be assessed as “reasonable OK” or “OK” and hence improve the overall stability.

Rendering: The information on process parameters shows that these are insufficient to reduce BSE-infectivity, therefore rendering is assessed as "not OK" throughout the reference period.

SRM-removal: SRMs in animals fit for human consumption are destined for human consumption but other SRM may be rendered for feed production. Therefore SRM-removal was and is "reasonably OK".

Other stability factors: Cross contamination is most likely as no feed ban existed until recently. BSE surveillance was unsatisfactory until present. The "other factors" therefore tend to reduce the stability.

Stability of the BSE/cattle system in <u>COLOMBIA</u> over time					
Stability		Reasons			
Period	Level	Feeding	Rendering	SRM-removal	Other
1980-at current	Very unstable	Not OK	Not OK	Reasonably OK	

Table 5: Stability resulting from the interaction of the three main stability factors and the other stability factors. The Stability level is determined according to the SSC-opinion on the GBR of July 2000.

On the basis of the available information it has to be concluded that the country's BSE/cattle system was and is very unstable.

4. CONCLUSION ON THE RESULTING RISKS

4.1 Interaction of stability and challenges

The conclusions on the stability of the Colombian BSE/cattle system over time and on the external challenges are summarised in the table below. From the interaction of the two parameters "stability" and "external challenge" a conclusion is drawn on the level of "internal challenge" that emerged and that had to be met by the system, in addition to external challenges that occurred.

The BSE/cattle system of Colombia was exposed to a low external challenge since 1988, while being internally very unstable.

An external challenge resulting from cattle import could only have led to an internal challenge once imported infected cattle were rendered for feed and this contaminated feed then reached domestic cattle. Cattle imported for slaughter would normally be slaughtered at an age too young to harbour plenty of BSE-infectivity or to show signs, even if infected prior to import. Breeding cattle, however, would normally live much longer, only animals having problems would be slaughtered younger. If slaughtered at the age of 4-6 years, they could approach the end of the BSE-incubation period and harbour infectivity. Hence the date when

cattle imports could have led to an internal challenge is about 3 years after the import of breeding cattle that possibly could have been already infected prior to import. Special measures taken to avoid processing of imported cattle into feed could influence the risk of this happening.

On the other hand imports of contaminated MBM, MM, BM or Greaves would lead to an internal challenge in the year of import, if fed to cattle. The feeding system is of utmost importance in this context. If it could be excluded that imported, potentially contaminated feed stuffs reached cattle, such imports might not lead to an internal challenge at all.

In view of the above-described reflection, the registered external challenges to Colombia could have initiated an internal challenge as early as in 1986, if cattle imported from France were infected. However this is a negligible risk. The cattle that were imported from DE since 1987 could have triggered an internal challenge from 1992/1993 onwards. A presence of infected animals could have resulted from these imports around 1993.

Therefore it is concluded that the emergence of an internal challenge in the early 90s cannot be excluded. In view of the very unstable system the resulting internal challenge would have been growing over time.

Since only the intensified dairy farms would use supplementary feeds (likely to contain MBM), the internal challenge would most likely develop within this part of the cattle population, representing about 1.7% of the entire cattle population or about 360,000 animals.

The increased cattle imports from Spain and Germany did pose a further external challenge.

INTERACTION OF STABILITY AND EXTERNAL CHALLENGE IN COLOMBIA			
Stability		External Challenge	Internal challenge
Period	Level	Level	
1980-1987	Very Unstable	Negligible	Not present
1988-1993		Low	Unlikely to be present but cannot be excluded, and if present, it would be growing
1994- At current			

Table 6: Internal challenge resulting from the interaction of the external challenge and stability. The internal challenge level is determined according to guidance given in the SSC-opinion on the GBR of July 2000.

4.2 Risk that BSE infectivity entered processing

A risk that BSE infectivity entered processing arose if imported cattle, infected prior to export, were slaughtered and processed. The earliest appearance of this risk in Colombia can be assumed to be in the mid 90s, if cattle imported from Germany in the 80s were slaughtered younger than normal (i.e. before they reached 12 years).

4.3 Risk that BSE infectivity was recycled and propagated

If BSE-infectivity was indeed introduced into the country, the very unstable system would have recycled and amplified it, most likely confined to the intensively managed dairy herds. It cannot be excluded that this process started sometime in the mid 90s. The risk that BSE infectivity was recycled and amplified increased towards the end of the 90s.

5. CONCLUSION ON THE GEOGRAPHICAL BSE-RISK

5.1 The current GBR as function of the past stability and challenge

- The current geographical BSE-risk (GBR) level is *II*, i.e. *it is unlikely but not excluded* that domestic cattle are (clinically or pre-clinically) infected with the BSE-agent.

5.2 The expected development of the GBR as a function of the past and present stability and challenge

- As long as stability remains as low as it is, the probability of cattle to be (pre-clinically or clinically) infected with the BSE-agent would increase if already present, most likely within the highly specialised dairy population, even without further external challenges.
- In light of the current very unstable system, any further external challenge will give rise to an increased risk that, over time, BSE develops in the country. This would not be registered by the existing inadequate surveillance for a long time. Taking into account the improved surveillance plan for 2001, if properly enforced, BSE-cases in the country would be able to be detected.

5.3 Recommendations for influencing the future GBR

- Enhancing the stability of the system would on the one hand make the development of BSE less likely. It would also make the system less vulnerable to future external challenges. Banning MBM from being fed to cattle and excluding "fallen stock¹" and the SRM included in it from entering the feed cycle will increase stability. It also may be feasible to exclude animals from rendering that come from intensive dairy farms and which have probably been exposed to MBM.

¹ More precisely animals "dead at arrival" and condemned in ante mortem inspection.

- Increased passive and active surveillance (i.e. sampling of asymptomatic at-risk cattle populations, adult dairy cattle from the intensively managed dairy herds, fallen stock and emergency slaughter, by means of rapid screening) would allow the efficiency of the stability enhancing measures to be monitored.
- The surveillance measures foreseen for 2001 as well as the currently installed MBM-ban, will already apply some of the recommendations and would, if properly enforced, decrease the future GBR.