Final report on the updated assessment of the Geographical BSE-Risk (GBR) of COSTA RICA - 2003

10 April 2003

NOTE TO THE READER

Independent experts have produced this report, applying an innovative methodology by a complex process to data that were 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 and its update of 11 January 2002. These opinions are available at the following Internet address:

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

This report, and the opinion of the SSC based on it, is now serving as the risk assessment required by the TSE-Regulation EU/999/2001 for the categorisation of countries with regard to their BSE-status. The final BSE-status categorisation depends also on other conditions as stipulated in annex II to that TSE-Regulation.

1. DATA

- The information available was suitable to carry out a qualitative assessment of the GBR. Nevertheless, this report is based on reasonable worst case assumptions, in cases where data are not complete.

Sources of data

- Country dossier (CD) consisting of information provided from the country's authorities received in 2001 and 2002.

Other sources:

- EUROSTAT data on export of "live bovine animals" and on "flour, meal and pellets of meat or offal, unfit for human consumption; greaves" (customs code 230110), covering the period 1980-2001.
- UK-export data (UK) on "live bovine animals" (1980-1996) and on "Mammalian Flours, Meals and Pellets", 1988-1996. As it was illegal to export mammalian meat meal, bone meal and MBM from UK since 27/03/1996, exports indicated after that date under customs code 230110 should only have included non-mammalian MBM.
- Export data from Cyprus, the Czech Republic, Estonia, Hungary, Lithuania, Romania, Slovenia and Switzerland.

2. EXTERNAL CHALLENGES

2.1 Import of cattle from BSE-Risk[1] countries

Table 1 provides an overview of the data on live cattle imports, as provided in the country dossier (CD) and the corresponding data on relevant exports as available from BSE risk countries that exported to Costa Rica. Only data from risk periods are indicated, i.e. those periods when exports from a BSE risk country already represented, according to the SSC opinion on the GBR method of January 2002, an external challenge.

- According to the CD, since 1980 Costa Rica did not import live cattle from UK. This information is confirmed by Eurostat and by the UK export data.
- According to the CD, live cattle from other BSE-Risk non-UK countries have not been imported into Costa Rica since 1980. However, according to Eurostat, Costa Rica imported 35 pure-bred breeding cattle from Spain in 1998.
- According to export data from the Czech Republic, a total of 64 live cattle were exported to Costa Rica in 1993, 423 in 1994, 54 in 1997 and 80 in 1999.
- According to export data from Hungary, 45 live bovines were exported to Costa Rica in 1994.

For these imports (in total 701 animals), no information is available on the breed, age and final fate.

[1] BSE-Risk countries are all countries already assessed as GBR III or IV or with at least one confirmed domestic BSE case.

2.2 Import of MBM[2] or MBM-containing feedstuffs from BSE-Risk countries

- According to the CD, Costa Rica did not import MBM from UK since 1980. This information is confirmed by Eurostat and by the UK export data. It was indicated that the import was not legal as it is stated in the Decree 14584 (Ministry of Agriculture and Livestock); and in the animal health law 6243. However, no further information is provided on the content of these regulations and what specifically was the basis for not importing MBM from UK to Costa Rica.
- According the CD, Costa Rica imported 79 tons of MBM from Spain in 1995 and a small quantity (54 kg.) from Denmark in 1997.
- According Eurostat, 24 tons of MBM were exported from Austria in 1995 and 5 tons from the Netherlands in 1999 to Costa Rica. These amounts are not mentioned as imports in the CD.

Data on MBM exports/imports are summarised in table 2.

[2] For the purpose of the GBR assessment the abbreviation "MBM" refers to rendering products, in particular the commodities Meat and Bone Meal as such; Meat Meal; Bone Meal; and Greaves. With regard to imports it refers to the customs code 230110 "flours, meals and pellets, made from meat or offal, not fit for human consumption; greaves".

Country:	Data	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	0	1	Total
Czech Rep.	CD																							0
	other														64	423			54		80			621
Hungary	CD																							0
	other															45								45
Spain	CD																							0
	other																			35				35
UK	CD																							0
	other																							0
ALL TOTALS																								
non UK	CD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	other	0	0	0	0	0	0	0	0	0	0	0	0	0	64	468	0	0	54	35	80	0	0	701
UK	CD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 1: Live cattle imports into Costa Rica (CD) and corresponding exports from BSE-Risk countries. Source for export data: Eurostat and UK export statistics and, where available, export statistics from other BSE-Risk countries. Note: Only imports in Risk periods (grey shaded) are taken into account for assessing the external challenge. Risk periods are defined according to the SSC opinion of 2000 as updated in 2002. *As the data provided from 1993 to 1995 by the Czech Republic and Hungary on exports of bovine animals are expressed in kg, the number of animals imported in 1993 and 1994 has been estimated by an average rate of 400 kg/animal.

Country:	Data	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	0	1	Total
Austria	CD																							0
	other																24							24
Denmark	CD																		0					0
	other																							0
Netherlands	CD																							0
	other																				5			5
Spain	CD																79							79
	other																							0
UK	CD																							0
	other																							0
ALL TOTALS																								
non UK	CD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	0	0	0	0	0	0	79
	other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	0	0	0	5	0	0	29
UK	CD	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 2: MBM imports into Costa Rica (CD) and corresponding exports from BSE-Risk countries. Source for export data: Eurostat and UK export statistics and, where available, export statistics from other BSE-Risk countries. Note: Only imports in Risk periods (grey shaded) are taken into account for assessing the external challenge. Risk periods are defined according to the SSC opinion of 2000 as updated in 2002.

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 (as updated in January 2002).

- Live cattle imports:

In total it is assumed that the country imported, over the period 1980 to 2001, 701 live cattle from BSE-risk countries. No animals were imported from the UK. Broken down to 5-years periods the resulting external challenge is as given in table 3.

- MBM imports:

In total Costa Rica imported, over the period 1980 to 2001, 108 tons of MBM from BSE-risk countries, of which none came from the UK. Broken down to 5-years periods the resulting external challenge is as given in table 3.

External Challenge experienced by COSTA RICA				
External challenge		***Reason for this external challenge***		
Period	**Overall Level**	**Cattle imports**	**MBM imports**	**Comment**
1980 to 1990	Negligible	Negligible	Negligible	
1991 to 1995	Low	Very Low	Low	
1996 to 2000	Negligible	Negligible	Negligible	

Table 3: External Challenge resulting from live cattle and/or MBM imports from the UK and other BSE-Risk countries. The Challenge level is determined according to the SSC-opinion on the GBR of July 2000 (as updated in January 2002).

On the basis of the available information, the overall assessment of the external challenge is as given in the table above.

3. STABILITY

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

Feeding

No information is available on the number of feed mills operating in Costa Rica.

Use of MBM in cattle feed

It was legally possible to feed MBM to ruminants and it was common practice until February 2001, when an official ban to feed mammalian MBM to ruminants has been installed and controls have started.

The annual consumption of MBM by cattle until 2000 was 2.802 tons; the average animal protein content in cattle feed was 5,28%.
It is concluded that feeding cattle with MBM was generally the case until February 2001.

Feed ban

An official ban to feed mammalian MBM to ruminants is in force since February 2001, which was established by Decree n° 29285-MAG-S.

Potential for cross-contamination and measures taken against

Before the feed ban was installed cross-contamination was no issue because MBM was voluntarily and regularly included in cattle feed.

According to the available information the following measures have been since February 2001 in place to reduce cross-contamination of cattle-feed with mammalian protein:

- Specific instructions for processing and storing of animal feed were issued including the exclusive use of equipment in the preparation of feed for ruminants and of separated storing facilities.
- Measures are taken to transport cattle feed separately from other feed.
- Farmers are informed through publicity campaigns not to use MBM in cattle feed anymore.

It is concluded, as a reasonable worst case assumption, that cross-contamination can not be excluded.

Control of feed ban

According to the CD, since its installation, compliance with the feed ban is controlled by inspection of feed mills and checks on labeling and sampling plans are carried out. No information is available on the frequency and results of these controls.

Rendering

A rendering industry exists. The annual production over the past 10 years was 4.618 tons of MBM per year. It is not clear what were the main market outlets but apparently part of it (about 2.800 tons per year) was used for cattle feed production.

Raw material includes bovine raw materials but it is not clear whether other materials are rendered at all (such as pigs or poultry). It is assumed that condemned material and animals refused after ante mortem inspection (including animals that died during transport to the slaughterhouses) are rendered as well.

With regard to rendering processes the information in the CD is not fully conclusive. Apparently two sets of parameters are used ($140°C/220^{min}/4^{bar}$ and $140°C/40^{min}/5^{bar}$). However, it is not clear whether the pressure is applied directly to the rendering material or refers to the steam used for heating the jacket. As a reasonable worst case assumption, the latter is assumed. Therefore, with regard to reducing BSE-infectivity both processes are not equivalent to the $133°C/20^{min}/3^{bar}$ and the ability of the rendering system to reduce incoming BSE-infectivity is judged to be not satisfactory.

SRM and fallen stock

A SRM ban does not exist in Costa Rica. SRM are normally included in the material rendered for feed production or used for human consumption.

According to the information provided, usually fallen stock from pasture is not collected and rendered, their fate is however not specified. It is assumed that dead animals are normally either buried, burned or left for consumption by wild carnivores.

Conclusion on the ability to avoid recycling

In light of the above-discussed information it has to be assumed that the BSE agent, should it have entered the territory of Costa Rica, would have been recycled and potentially 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

According to the CD, the current cattle population in Costa Rica is about 1,3 million heads. The age distribution of cattle alive is as follows:

Age Group	Number of Heads
Females	
< 1 year	153,000
From 1 to 2 years	154,000
>2 years	649,000
Males	
< 1 year	124,000
From 1 to 2 years	133,000
>2 years	120,000
Bulls	25,000
Total	**1,358,000**

Out of this total, a 59 % of the animals older than 2 years are intended for beef production. Dairy cows are a 17% of the total population and a 24 % of cattle are in holdings with a dual-purpose (beef/milk) production.

The predominant breed in beef and dual-purpose production systems is Brahman. Brown Swiss and Holstein are used also in dual-purpose farms while dairy specialized holdings are made up by Jersey and Holstein cattle.

No data on the age at slaughter are available.

BSE surveillance

Notification of BSE is compulsory since 12 February 2001. However, no description is given on the criteria for a BSE-suspect. No compensation is foreseen.

Awareness / training measures are said to be in place since 1998. According to the CD an official education program exists. This includes various briefings about BSE to staff from food industry and rendering plants. Written information about the disease has been published by the Animal Health Office of the Ministry of Agriculture and Livestock of Costa Rica. Such information was sent to farmers associations as well. Detailed information on this official program was not provided.

Since July 2000 laboratory personnel is trained in Germany in histopathology of the central nervous system (the only method used to verify BSE-suspects). Confirmation of the initial diagnosis will be requested, where needed, in Germany by immuno-histochemistry. Until today no sample needed to be confirmed.

According to the CD, BSE-Surveillance began in 1999. The surveillance is focused on animals showing nervous symptoms and on a random sampling of animals aged over thirty months subject to normal slaughter. From 1999 to 2001 a total of 178 cattle brains were examined, 90 in 1999 (all healthy slaughtered cattle), 13 in 2000 (all animals showing central nervous symptoms) and 75 in 2001 (45 brains from animals showing central nervous symptoms and 30 brains from healthy slaughtered cattle). None was found positive.

These figures are below the OIE requirements on BSE surveillance and monitoring.

3.3 Overall assessment of the stability

For the overall assessment of the stability, the impact of the three main stability factors (i.e. feeding, rendering and SRM removal) and of the additional stability factor, surveillance has to be estimated. Again, the guidance provided by the SSC in its opinion on the GBR of July 2000 is applied.

Feeding

Feeding MBM to cattle was legally possible and generally practised until February 2001. The available information on the control of the feed ban does not allow judging the efficiency of this recent feed ban and it is hence assumed that feeding was and is **"not OK"** until the end of 2000. Since 2001 it is considered as **"reasonably OK"**.

Rendering

Rendering ruminant material is and was a common practice in Costa Rica. However, on-farm fallen stock is excluded from rendering. It is assumed that the processes used were and are not adequate for reducing BSE-infectivity, if present. Therefore rendering is **"not OK"** throughout the reference period.

SRM-removal

No SRM ban is in place in Costa Rica and SRMs are normally rendered. Therefore SRM removal was **"not OK"** throughout the reference period.

BSE surveillance

On the basis of the available information it is concluded that until recently (1999) no formal-surveillance existed in Costa Rica and that it is highly unlikely that small numbers of BSE-cases, if present, could have been discovered. With the recent measures the surveillance is somewhat improved but still insufficient.

Stability of the BSE/cattle system in COSTA RICA over time					
Stability		Reasons			
Period	Level	Feeding	Rendering	SRM removal	BSE surveillance
1980 – 2000	Extremely Unstable	Not OK	Not OK	Not OK	↓
2001-	Very Unstable	Reasonably OK			

Table 4: Stability resulting from the interaction of the three main stability factors and the BSE surveillance. The stability level is determined according to the SSC-opinion on the GBR of July 2000.

4. CONCLUSION ON THE RESULTING RISKS

4.1 Interaction of stability and challenges

In conclusion, the stability of the Costa Rica BSE/cattle system in the past and the external challenges the system has coped with between 1980 and 2000 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 had to be met by the system, in addition to external challenges that occurred.

INTERACTION OF STABILITY AND EXTERNAL CHALLENGE IN COSTA RICA			
Period	**Stability**	**External Challenge**	**Internal challenge**
1980 to 1990	**Extremely Unstable**	**Negligible**	**Highly Unlikely**
1991 to 1995		**Low**	**Unlikely to be present but cannot be fully excluded.**
1996 to 2000		**Negligible**	
2001 -	**Very Unstable**		

Table 5: 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.

An external challenge resulting from cattle imports could only lead to an internal challenge once imported infected cattle were rendered for feed and this contaminated feed 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 and only animals having problems would be slaughtered younger. If being 4-6 years old when slaughtered, they could suffer from early signs of BSE, being approaching the end of the BSE-incubation period. In that case, they would harbour, while being pre-clinical, as much infectivity as a clinical BSE case. Hence cattle imports could have led to an internal challenge about 3 years after the import of breeding cattle (that are normally imported at 20-24 months of age) that could have been infected prior to import.

In the case of Costa Rica from 1991 to 1995 (first imports since 1993) an extremely unstable system was exposed to a very low external challenge due to the import of live cattle from the Czech Republic and from Hungary. No information is available on the origin, breed, age and final fate of these animals, therefore as a reasonable worst case assumption it is assumed that should these animals have been slaughtered their offals including the SRM would have entered the rendering system. Therefore cattle imports to the territory of Costa Rica could have led to an internal challenge from 1996 onwards.

On the other hand imports of contaminated MBM 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 the case of Costa Rica a low external challenge occurred in 1995, due to import of MBM from Austria and Spain. Import of contaminated MBM could have led to an internal challenge in the year of import if fed to the cattle.

These conclusions are based on a worst case assumption as no information is provided in the CD on the imports of live cattle and MBM demonstrating that they could not have led to an internal challenge.

In view of the above-described reflection the registered external challenges could have led to an internal challenge in Costa Rica from 1995 onwards. This internal challenge met the extremely unstable system.

4.2 Risk that BSE infectivity entered processing

A risk that infectivity entered processing arose if infected cattle were slaughtered. These cattle might have been imported and already infected prior to export or might have been infected in Costa Rica due to feeding of infected MBM. This risk arose from about 1996 at the earliest. However, this risk appears to be low.

4.3 Risk that BSE infectivity was recycled and propagated

Given the fact that the system was extremely unstable, any BSE infectivity that enters processing would most probably be recycled via cattle feed and quickly amplified.

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 no external challenge occurs in the future, the GBR would remain unchanged. However, in view of the extremely unstable system, any non negligible external challenge would lead to an increase of the GBR.

5.3 Recommendations for influencing the future GBR

Costa Rica should improve the stability of its BSE/cattle system to make it less vulnerable to authorised or non-authorised imports.

Also the surveillance system should be improved in order to have a better control of the efficiency of measures taken to counteract the BSE risk. Improved passive and active surveillance, i.e. sampling of animals not showing signs compatible with BSE from “at-risk” cattle populations, such as adult cattle in fallen stock and emergency slaughter, by means of rapid testing, would allow monitoring the efficiency of the stability enhancing measures.