Risk assessment report on beef and beef offal imported to Japan from Costa Rica (Prions/Self-tasking)

(Expert Committee on prions)

Food Safety Commission of Japan (FSCJ)
February, 2011

4. Costa Rica

(1) Live Cattle

a. Risk of BSE Invasion

Import of Live Cattle from BSE Risk Countries

Data on imported live cattle to Costa Rica are shown in Table 26. Figures in the table are taken from the questionnaire response by the Costa Rican authority and the data of cattle exports from BSE risk countries to Costa Rica (Source: the World Trade Atlas. Trade statistics published by state governments are also used for some figures). Table 26 shows the number of cattle imported from the BSE risk countries only during the period when weighting factors are set.

According to the questionnaire response, Costa Rica banned importation of live cattle and all ruminant-derived products, including meat, offal, and byproducts, from countries with BSE cases and BSE risk in 2001. The numbers of live cattle imported to Costa Rica from BSE risk countries in the period between 1986 and 2007 were 35 from European countries with moderate contamination (Spain), 310 from the US, and 110 from Mexico.

Meanwhile, the number of live cattle exported to Costa Rica from BSE risk countries are reported in the World Trade Atlas. Those numbers include 35 from European countries with moderate contamination (Spain), 80 from European countries with low contamination (Czech Republic), 376 from the US, and 8 from Canada.

Import of MBM from BSE Risk Countries

Data on imported MBM to Costa Rica are shown in Table 27. The figures in the table are taken from the questionnaire response by the Costa Rican authority and the data on MBM exports from BSE risk countries to Costa Rica (Source: the World Trade Atlas. Trade statistics published by state governments are also used for some figures). Table 27 shows the amount of MBM imported from the BSE risk countries only during the period for which weighting factors are set.

According to the questionnaire response, as stated in above, Costa Rica banned importation of live cattle and all ruminant-derived products, including meat, offal, and byproducts, from countries with BSE cases and BSE risk in 2001. Therefore, no MBM was reportedly imported from BSE risk countries in the period between 1986 and 2007.

Meanwhile, the trade statistics reports 5 tons of MBM exported to Costa Rica from European counties with moderate contamination (the Netherlands), 3,024 tons from the US, and 73 tons from Canada.

Import of Animal Oil/Fat from BSE Risk Countries

The questionnaire response from Costa Rican government states that the regulations applied to live cattle and MBM are also applicable for animal oil/fat. According to the statistics of the feed registration and quality control division, there has been no import of cattle-derived oil/fat for cattle feed.

Assessment of the Use of Imported Live Cattle and MBM for Animal Feed

According to the questionnaire response from Costa Rican authority, 35 live cattle imported from Spain were exempted from consideration as risk animals because they were reportedly exported to Guatemala via Costa Rica.

In regards with the live cattle imported from Mexico, the possibility to affect the level of invasion risk is considered low based on the size of import.

Based on the report that no cattle-derived oil/fat is imported for cattle feed in Costa Rica, the animal oil/fat in Costa Rica was evaluated to have no risk

Table 26. Import of Live Cattle from BSE Risk Countries experienced by Costa Rica

			1986-1990	1991-1995	1996-2000	2001-2005	2006-2007	Total
			Number of imported cattle	Number of imported cattle	Number of imported cattle	Number of imported cattle	Number of imported cattle	Number of imported cattle
Import data[1]	UK	Questionnaire	0	0	0	0	0	0
		Trade statistics	0	0	0	0	0	0
	Europe (Countries with moderate contamination)	Questionnaire	0	0	35	0	0	35
		Trade statistics	0	0	0	0	0	0
	Europe (Countries with low contamination)	Questionnaire	0	0	0	0	0	0
		Trade statistics	0	0	80	0	0	80
	USA	Questionnaire		0	145	155	10	310
		Trade statistics		122	181	69	4	376
	Canada	Questionnaire	0	0	0	0	0	0
		Trade statistics	0	8	0	0	0	8
	Others (Mexico)	Questionnaire	0	0	47	63	0	110
		Trade statistics	0	0	0	0	0	0
	Total	**Questionnaire**	**0**	**0**	**227**	**218**	**10**	**455**
		Trade statistics	**0**	**130**	**261**	**69**	**4**	**464**

		1986-1990		1991-1995		1996-2000		2001-2005		2006-2007		Total
		Number of imported cattle	UK Equivalent	Number of imported cattle	UK Equivalent	Number of imported cattle	UK Equivalent	Number of imported cattle	UK Equivalent	Number of imported cattle	UK Equivalent	Number of imported cattle
Number of imported cattle with a potential of being a source of exposure	UK	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
	Europe (Countries with moderate contamination)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
	Europe (Countries with low contamination)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
	USA			0	0.00	145	0.003	155	0.003	10	0.0002	310
	Canada	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
	Others (Mexico)	0	0.00	0	0.00	47	0.00	63	0.00	0	0.00	110
	Total	**0**	**0.00**	**0**	**0.00**	**192**	**0.003**	**218**	**0.003**	**10**	**0.0002**	**420**
		Negligible		**Negligible**		**Negligible**		**Negligible**		**Negligible**		

(Reference) Numbers calculated using the figures in the trade statistics.

Trade statistics[2]	Total	**0**	**0.00**	**130**	**0.003**	**261**	**0.80**	**69**	**0.001**	**4**	**0.0001**	**464**
		Negligible		**Negligible**		**Negligible**		**Negligible**		**Negligible**		

1. 'Number of cattle imported' and 'Number of imported cattle with a potential of being a source of exposure' cover only the period when weighting factors are set.
2. For the figures in trade statistics, import of live cattle from Spain is exempted to match the questionnaire responses.

Table 27. Import of MBM from BSE Risk Countries BSE experienced by Costa Rica

			1986-1990	1991-1995	1996-2000	2001-2005	2006-2007	Total
			Volume of importation (ton)	Volume of importation (ton)	Volume of importation (ton)	Volume of importation (ton)	Volume of importation (ton)	Volume of importation (ton)
Import data[1]	UK	Questionnaire	0	0	0	0	0	0
		Trade statistics	0	0	0	0	0	0
	Europe (Countries with moderate contamination)	Questionnaire	0	0	0	0	0	0
		Trade statistics	0	0	5	0	0	5
	Europe (Countries with low contamination)	Questionnaire	0	0	0	0	0	0
		Trade statistics	0	0	0	0	0	0
	USA	Questionnaire		0	0	0	0	0
		Trade statistics		0	0	622	2,402	3,024
	Canada	Questionnaire	0	0	0	0	0	0
		Trade statistics	0	0	0	73	0	73
	Others ( )	Questionnaire	0	0	0	0	0	0
		Trade statistics	0	0	0	0	0	0
	Total	**Questionnaire**	**0**	**0**	**0**	**0**	**0**	**0**
		Trade statistics	**0**	**0**	**5**	**695**	**2,402**	**3,102**

		1986-1990		1991-1995		1996-2000		2001-2005		2006-2007		Total
		Volume of importation (ton)	UK equivalent	Volume of importation (ton)	UK equivalent	Volume of importation (ton)	UK equivalent	Volume of importation (ton)	UK equivalent	Volume of importation (ton)	UK equivalent	Volume of importation (ton)
Volume of Imported MBM with a potential of being a source of exposure	UK	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
	Europe (Countries with moderate contamination)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
	Europe (Countries with low contamination)	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
	USA			0	0.00	0	0.00	0	0.00	0	0.00	0
	Canada	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
	Others ( )	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0
	Total	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**	**0.00**	**0**
		Negligible		**Negligible**		**Negligible**		**Negligible**		**Negligible**		

(Reference) Numbers calculated using the figures in the trade statistics.

Trade statistics[2]	Total	**0**	**0.00**	**0**	**0.00**	**5**	**0.05**	**695**	**0.02**	**2,402**	**0.05**	**3,102**
		Negligible		**Negligible**		**Negligible**		**Negligible**		**Negligible**		

1: 'Volume of MBM imported' and 'Volume of imported MBM that can be a source of exposure' are calculated only for the period when weighting factors are set.

2: We regard all of the MBM as a source of exposure because the exact number is unknown from the trade statistics as to how many of the imported MBM were not a source of exposure.

Assessment for external challenge

External challenge was evaluated based on the questionnaire response by the Costa Rican government. The level for risk of invasion for all periods after 1986 was regarded negligible with UK equivalent for live cattle of 0 (1986–1995), 0.003 (1996–2000), 0.003 (2001–2005), 0.0002 (in and after 2006). (The UK equivalents obtained in evaluation of invasion risk levels using trade statistics were 0.8 or lower for all periods between 1986 and 2007. The level of invasion risk for this period, therefore, was regarded 'negligible'.)

The external challenge resulting from MBM import was considered 'negligible' for the whole period between 1986 and 2007 based on the description that no MBM was imported during this period. (The UK equivalents obtained in evaluation of invasion risk levels using trade statistics were 0.05 or lower for the whole period between 1986 and 2007. The invasion risk for this period, therefore, was regarded 'negligible'.)

The overall invasion risk (combination of risks by imported live cattle and MBM) was regarded 'very low' for all periods between 1986 and 2007 (Table 28). (Evaluation of invasion risk level based on trade statistics also resulted in 'negligible' for all the periods.)

Table 28. External Challenge experienced by Costa Rica

	1986-1990	1991-1995	1996-2000	2001-2005	2006-2007
Live cattle	**Negligible**	**Negligible**	**Negligible**	**Negligible**	**Negligible**
MBM	**Negligible**	**Negligible**	**Negligible**	**Negligible**	**Negligible**
Overall Level	**Negligible**	**Negligible**	**Negligible**	**Negligible**	**Negligible**

b. Domestic Stability (BSE propagation risk of the country)

Feed regulations

The feed regulations related to BSE in Costa Rica include the 2001 ban on using of ruminant-derived meat, bone, MBM, meat scraps, blood, animal oil, and animal oil residue for ruminant feeds.

As in the case in Japan, the cattle in Costa Rica are fed mainly with roughage and concentrated feed. Calves are fed with mother milk and milk substitute. At about 64.5% of the farms in Costa Rica, cattle are raised together with pigs and/or chickens.

The major organizations to implement the feed regulations are the feed division and internal affairs division of the National Service of Animal Health (SENASA) at the Ministry of Agriculture (MAG). In Costa Rica, where farm-based feed management is legally obliged, registration of all farms is promoted to ensure the implementation of compliance with the regulations.

The main entity responsible for the implementation of regulations related to the production and distribution of feeds is the feed division of SENASA. Compliance with regulations is examined by inspectors on regular basis. In the examination, compliance with the Good Manufacturing Practice (GMP) and factors affecting quality and safety of products are examined. In addition, samples are collected and registration is checked to ensure the traceability. Each year about 30 to 100 cases of inspection are carried out and 1 to 6 cases of violation has been detected.

Feed samples are tested in microscopic examination. According to the data from 2004 to 2007, 89 samples were examined each year, and 10 to 12 samples were positive. When a MBM- contaminated lot is detected, its shipment is suspended. It is legally obliged to dispose of the lot, thoroughly check the possibility of cross contamination, and take necessary improvement measures.

Use of SRM

According to the document attached to the questionnaire response, while SRM has not been defined in Costa Rica, procedures to remove, separate and dispose of SRM are being discussed. Head, spinal cord, vertebral column, and distal ileum are used for animal feed after rendering. About 40% of MBM is used for pet food, while the rest (about 60%) is used for poultry feed.

Fallen stock, cattle subject for emergency slaughter, and bovines condemned at antemortem are buried.

Rendering Conditions

There is no specific regulation regarding rendering conditions in Costa Rica. Rendering is conducted under the atmospheric pressure at 130–135°C for 3 hours and batch processed.

Measures to Prevent Cross-contamination

According to the 2006 data, there are 42 feed mills in Costa Rica, all of which are 'mixed facilities' (they produced feed for both ruminant and non-ruminant animals). As measures to prevent cross contamination, lines are not separated for different types of products, but the lines are washed before changing products. In the 6 rendering facilities located in Costa Rica, no measure is taken against cross contamination.

Cross contamination measures in Costa Rica focus on the banning of use of MBM for ruminant feeds, not on the banning of use of SRM to feeds. However, since 2001, removal of SRM is requested on a voluntary basis, and some rendering facilities have started removing SRM.

Others

No case of Transmissible spongiform encephalopathy (TSE) has been detected in Costa Rica.

Assessment of Domestic Stability

The domestic stability was assessed based on the questionnaire response by the Costa Rican government. Our assessment revealed that the risk of exposure/propagation was "high" (1986 - 2001) and "moderate" (2002 - 2007) in Costa Rica (Table 29, Table 30).

Table 29. Domestic Stability in Costa Rica

Item	Status
Feeding	2001: Ban on feeding of ruminant-derived protein to ruminants
Use of SRM	[SRM] Used for feed after rendering. ≈ 40% of MBM is used for pet foods, while the rest (≈ 60%) is used for poultry feeds. [Fallen stock, emergency slaughter or bovines condemned at antemortem] Buried.
Rendering conditions	There is no regulation regarding rendering conditions. Rendering is conducted under the atmospheric pressure at 130–135°C for 3 hours and batch processed.
Measures to prevent cross-contamination	[Feed mills] All of the 42 facilities are mixed facilities. Lines are not separated for different types of products. Lines are washed before changing the products. [Rendering facilities] There are 6 facilities. No specific preventive measure for cross contamination is taken. Starting in 2001, removal of SRM is requested on a voluntary basis, and some rendering facilities have started removing SRM.

Table 30. Assessment of Domestic Stability in Costa Rica

	Feeding	Use of SRM, Rendering Conditions, Preventive measure against cross-contamination, etc.	Risk of exposure/ propagation
1986–2001	No specific regulations	–	High
2002–2007	Ban on feeding of ruminant-derived protein to ruminants		Moderate

c. Verification by surveillance, etc.

Population Structure

According to the questionnaire response, the total cattle population in Costa Rica was 1,358,000 in 2000.

Surveillance Outline

BSE surveillance in Costa Rica is conducted with a goal to detect the BSE design prevalence of at least one case per 100,000 in the adult cattle population at a confidence level of 95%.. The surveillance started in 2001 is conducted for the cattle suspected of showing symptoms of BSE, emergency slaughter, downers, cattle failed to pass the antemortem inspection, cattle died during transportation, and cattle died at the farm regardless of their ages. In addition, cattle imported from countries with the risk status of 'controlled or 'undetermined' are also subject to the surveillance.

All samples go through histopathological tests following the OIE manual. The numbers of cattle surveyed are available for 2000 and onwards. In 2000, 17 animals were surveyed and since 2000, about 100 animals have been surveyed each year. No BSE positive cattle has been detected. Whilst surveillance outcome for over the 7 year period (2001 to 2007) was assumed not enough to meet the standard which "will allow the detection of BSE around a study design prevalence at least one case per 100,000 in the adult cattle population, at a confidence level of 95%" as stipulated by OIE. (Table 31).

Table 31. Surveillance Point Calculation in Costa Rica

Number of cattle raised (2000): 1,358,000* → 300,000 points are needed in seven years.

Number of Animals Surveyed					
Year	Routine slaughter	Fallen stock	Casualty slaughter	Clinical suspect	**Total**
2001	45	0	0	39	**84**
2002	40	0	0	50	**90**
2003	17	0	0	78	**95**
2004	37	0	0	78	**115**
2005	1	17	54	28	**100**
2006	0	30	56	20	**106**
2007	0	23	49	12	**84**
Total	140	70	159	305	**674**
Surveillance point	(× 0.2) 28	(× 0.9) 63	(× 1.6) 254	(× 750) 228,750	**229,095 (Goal not achieved)**

Notes

-Surveillance points were compared with the points needed by the OIE Type A Surveillance.

-Surveillance points were calculated under an assumption that all the animals are aged 4 years or over and aged less than 7 years .

-The cattle population in the questionnaire response by the Costa Rican government was used for calculation with an assumption that all the animals are aged 24 months or over.

BSE Awareness Program and Mandatory Notification

The BSE awareness program in Costa Rica was started in 2000. In order to provide basic knowledge and proper information for livestock farmers and general public and to raise awareness of the whole nation, special articles were published in the "Livestock Hygiene Today," a magazine published by the Livestock Hygiene Agency of the Ministry of Agriculture (MAG). Also, pamphlets containing information about BSE are published and distributed. BSE is officially designated as an infectious disease in 2001, but no compensation system has been established in Costa Rica.

(2) Beef and Beef Offal

a. SRM Removal

Methods of SRM Removal, etc.

According to the questionnaire response, head (including brain, skull, eyes, trigeminal ganglia, and tonsils; excluding tongue and cheek meat), vertebral columns (including dorsal root ganglia), spinal cord, and distal

ileum are removed from the meat intended for export to Japan regardless of the age of the cattle. The removed SRM is stored in a container marked “BSE + SRM” and locked, and then sent to rendering facilities.
Splitting is a common practice in slaughter houses. Saws used for splitting are being washed and sterilized after use (before the use for the next carcass). Spinal codes are removed by using dedicated tools and washed with high-pressure water. Slaughter inspectors check the carcass to ensure no spinal cord tissues are left.

Tonsils are removed with a dedicated knife after the head inspection by either an inspector or veterinary officer. The removed tonsils are stored in a special container marked “SRM.” These processes are monitored in a monitoring program by MAG, where each piece of tonsil is examined by veterinary officers.

Distal ileum is removed with a dedicated knife in the room designated for processing of cattle-derived byproducts, and then an inspector checks the complete removal.

Control based on (SSOP) and (HACCP)

Compliance with the Sanitary Standard Operation Procedure (SSOP) and Hazard Analysis Critical Control Point (HACCP) is required for all the exporting facilities. Removal and disposal of SRM, prevention mixing of downers into the lines, and sampling are designated as CCP.

Additional Requirements, etc. for Export to Japan

According to the questionnaire response, compliance with HACCP is required for all the facilities that produce meat and meat products intended for export to foreign countries. Veterinary officers are distributed from SENASA to exporting facilities.

b. Slaughtering Processes

Antemortem inspection and BSE testing at the slaughter houses

Antemortem inspection is conducted by an official veterinarian. Each facility has a quarantine space, as well as fences to contain animals that are identified as cattle incapable of walking at the time of arrival. Processing of downers for foodstuff is prohibited. Samples are taken from the brain of downers and sent to inspection facilities.

Currently, BSE test for routine slaughter is conducted only with a part of these animals with surveillance purposes.

Stunning and Pithing

Stunning is conducted with guns of a non-penetration type or penetration type. The slaughter method of injecting pressured air or gas into the skull or the method using a hammer is not used in any slaughterhouses in Costa Rica.

Pithing is not practiced in slaughterhouses in Costa Rica.

c. Others

Mechanically Recovered Meat (MRM)

Mechanically Recovered Meat (MRM) is not produced in Costa Rica.

Traceability

According to the questionnaire response, SENASA established a national traceability system for all animals, animal-derived products, animal byproducts, and their materials in 2006. The information on the implementation status of the system is not available. The ratio of the cattle for which the age in months can be specified by the identification system among the whole cattle raised is reported as “0%.”

Number of Slaughterhouses and Number of Slaughtered Animals

Meat intended for export to Japan is processed in 3 facilities (meat processing plants adjacent to a slaughterhouse). Annual number of animals slaughtered in these facilities was 328,596, according to the 2006 data.

d. Assessment of Risk-reducing Measures at Meat Processing Lines

Based on the questionnaire response by the Costa Rican government, the risk-reducing measures at meat processing lines in Costa Rica were assessed. The risk-reducing efficacies of the measures were recognized ‘extremely effective’ in the country (Table 32).

Table 32. Summary of Assessment n Costa Rica

		Measure	Judge
Current Practice of SRM Removal	Definition of SRM	No national definition for SRM.	SRM is removed based on the regulations of the specific country (Methods of practice, etc.:◎)
	Removal of SRM	[Meat intended for export to Japan] -Head, vertebral column, spinal cord, and distal ileum (all ages) are removed.	
	Methods, etc.	Split saws are washed between the carcasses. Carcasses are washed with high-pressure water. Slaughter inspectors check carcasses for spinal cord residues. HACCP and SSOP are implemented at exporting facilities.	
Inspection at slaughter houses Stunning and pithing	Inspection at slaughterhouse	-Antemortem inspections are conducted by veterinarian officers. Processing of downers for foodstuff is prohibited. Samples are taken from the brain of downers. -BSE test for routine slaughter is conducted only with a part of these animals with surveillance purposes.	○
	Stunning with injection of pressured air or gas into the skull	Not practiced.	
	Pithing	Not practiced.	
MRM		Not produced.	
Additional requirements, etc. for export to Japan		-Compliance with HACCP is obligated for exporting facilities. - SENASA's veterinarian officers are distributed to exporting facilities.	
Livestock Hygiene Requirements			
Administrative guidance on import of beef for human consumption, etc. by notice		Importing companies are instructed to withhold import of SRM for human consumption even from non-affected countries in order to prevent possible confusion in case BSE occurs in that country.	
Assessment of risk-reducing measures		**Efficacy of risk-reducing measures: 'extremely effective'.**	

(3) Conclusion

The evaluation of beef and beef-offal imported from Costa Rica, based on the Costa Rica's responses, resulted in our consideration that the external challenge is "negligible" for the whole period between 1986 and 2007. In addition, the risk against domestic (internal) stability was considered that risk of exposure/propagation was "high" for the period between 1986 and 2001, and "moderate" for the period between 2002 and 2007.

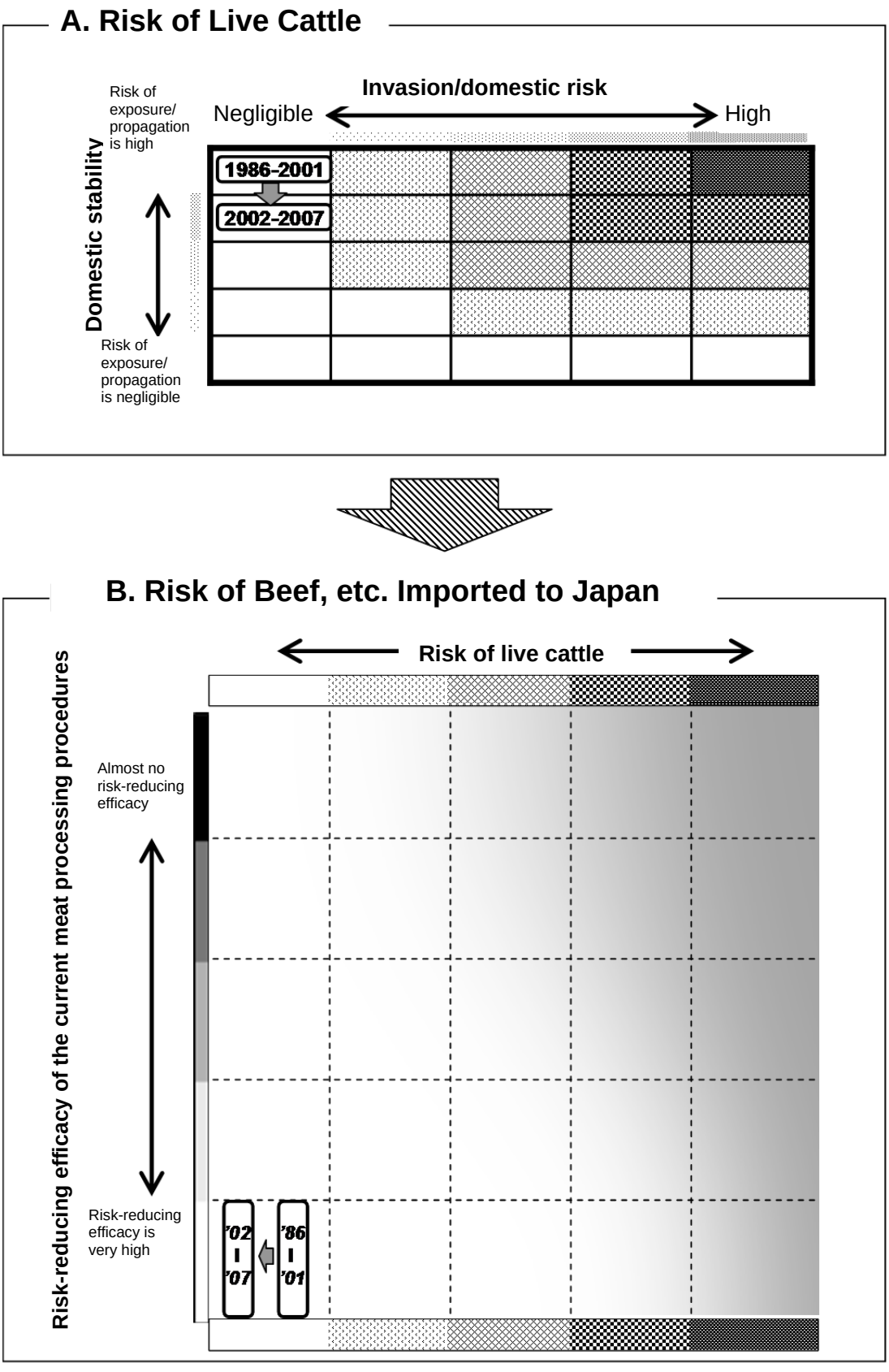
Based on the results of assessments for external challenge and risk against domestic stability, the risk of BSE exposure/propagation in Costa Rica is considered to be negligible.

The surveillance so far has turned out to be with no BSE positive cattle. However, the surveillance outcome over the immediate seven year period(2001 to 2007) was not assumed sufficient enough to meet the standard which "will allow the detection of BSE around a design prevalence of at least one case per 100,000 adult cattle population, at a confidence level of 95%" as stipulated by OIE. Thus improvement of the surveillance system is desired to allow a higher level of scientific verification.

Risk-reducing effect during the meat processing steps was assessed as "extremely effective".

Judging from those presented above, the potential risk of BSE exposure/propagation in Costa Rica is considered negligible, and the risk-reducing effect during the meat processing steps was assessed as "extremely effective." Therefore, the risk of BSE prion contamination in beef and beef-offal imported from Costa Rica is considered to be negligible.

<Reference: Costa Rica >



Periods show the birth cohort years (birth years of cattle)