TAFS

INTERNATIONAL FORUM FOR TRANSMISSIBLE ANIMAL DISEASES AND FOOD SAFETY
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TAFS[1] Position Paper on Relaxation of the Feed Ban in the EU

Epidemiological evidence implicated contaminated rendered meat and bone meal as the source of the BSE epidemic in the United Kingdom, continental Europe as well as a few other countries around the world. With the overall global decline of BSE cases, national governments are beginning to explore the possibility of relaxing some of the measures taken to bring the disease under control. This paper will examine the current scientific knowledge and other facets that may impact decisions regarding the feed bans.

Introduction and background

European Union

- Bovine spongiform encephalopathy was first identified in cattle in 1986 in the United Kingdom (UK) (Ref. 1), from where it subsequently spread, first to other European countries and later to additional countries worldwide (Ref. 2). By 1988, epidemiological evidence suggested that infection was transmitted between cattle by oral ingestion of infectious animal proteins derived from infected cattle that were rendered and included in feed (Ref. 3). Following this finding, the feeding of ruminant proteins to ruminants was prohibited in the UK. However, evidence demonstrated that this feed ban was not fully effective in preventing new infections. Therefore, over the following years, increasingly more restrictive feed bans were implemented in the UK and the European Union (EU).

- In 1988, the UK banned the feeding of ruminant proteins to ruminants. In 1990, the inclusion of specified risk materials in feed for all animals was prohibited. Then in 1994, the feed ban was further tightened to prohibit the inclusion of all mammalian proteins in ruminant feed. Finally in 1996, the UK prohibited the feeding of all animal proteins to all farmed animals.

- The first feed ban for the entirety of the EU was not implemented until 1994, when the feeding of mammalian proteins to ruminants was prohibited. Some national governments took their own actions to implement restrictions prior to the 1994 prohibition. In 2001, this feed ban was extended to include the feeding of all processed animal proteins (PAPs) to all farmed animals. Only very few exceptions were allowed under strict conditions, including the use of fishmeal

[1] TAFS is an international platform created by a group of scientists, food industry experts, animal health regulators, epidemiologists, diagnosticians, food producers, and consumers. Its purpose is to establish and maintain lines of communication for the dissemination of reliable information to the public that can maintain confidence in the safety of food with regard to Transmissible Animal Diseases (TAD).

for non-ruminants and the use of blood meal derived from non-ruminants for fish feed (Ref. 4).

- Both in the UK and in the rest of the EU it was found that these total feed bans for all farmed animals were the only option to prevent the intentional or unintentional inclusion of ruminant protein in ruminant feed in the feed production process, and to exclude the possibility of on-farm crossfeeding of ruminants with non-ruminant feed containing ruminant proteins. This extreme zero-tolerance level was necessary because it was determined that cattle could be infected by as little as 1 mg of infectious tissue in their feed (Ref. 5). Minimal levels of crosscontamination of ruminant feed with infectious materials could therefore be sufficient to cause new infections in cattle.

- In addition to the feed bans, European Union countries also required that rendering be conducted under the conditions of 133º C, 3 bars of pressure for 20 minutes and prohibited the inclusion of certain specified risk materials (SRMs) which had to be completely destroyed.

- One tool to verify compliance with the feed ban is testing of feed samples. Various diagnostic techniques are available, namely classical microscopy, near infrared microspectrometry (NIRM), immunoassay methods and polymerase chain reaction (PCR) (Ref. 6). Since the beginning of 2001, the reports of contaminated feed samples have reduced significantly (Refs. 7, 8), however, they have never dropped to zero. The tests are designed to detect the presence of mammalian protein despite the species. Thus some very low levels of contamination of feed are considered inevitable, due to the possible inclusion of small animals (e.g. rodents,) that are killed during the harvest of the plant raw materials (Ref. 9).

- The number of BSE cases has dropped significantly in the UK and continental Europe since the beginning of active surveillance in 2001. Very few BSE cases have been born after the 2001 feed ban, and the number of cases born after 2001 continues to decrease. At the same time, the average age at slaughter of detected BSE cases continues to increase, indicating that the exposure of the animal occurred at a time point prior to the expanded ban (Ref. 10). These data suggest that the total feed bans (1996 in the UK and 2001 in the rest of the EU) have been effective in significantly attenuating if not eliminating the BSE epidemic in the EU.

Developments since implementation of the European total feed ban in 2001

- Since the implementation of the feed ban in 2001, three significant changes have been made to the relevant Regulation 999/2001, which took into consideration the increased knowledge about BSE and BSE infectivity in different tissues. As a consequence, relaxations of the feed ban were allowed in two cases, but in a third case the feed ban was further tightened.

- The use of fishmeal has been allowed in milk replacers intended for feeding of unweaned ruminants as a supplement to, or substitute for, post-colostral milk before weaning is complete (Ref. 11).

- Also, a derogation has been made to allow the use of feed of plant origin contaminated with insignificant amounts of bone fragments due to environmental contamination. A certain level of environmental contamination is inevitable during harvest of plants when for example small animals are killed by the harvest machines. Individual EU countries can decide to apply this derogation based on the positive results of a risk assessment (Ref. 9).

- In one aspect the feed ban was further tightened. The EFSA had previously concluded that classical scrapie can be transmitted from ewes to lambs via colostrum or milk. Though no conclusive evidence was available, the EFSA also concluded that it was likely that BSE infectivity would also be present in milk or colostrum of BSE infected small ruminants. BSE

and classical scrapie in small ruminants can be distinguished only by time-consuming, laborious tests, and therefore a precautionary approach towards scrapie-infected small ruminant herds was justified. In order to prevent the spread of classical scrapie - and possibly BSE - between flocks, it was decided to ban the use of milk and milk products coming from flocks infected with classical scrapie for feeding of ruminants in other flocks (Ref. 12).

Countries outside of Europe

- After confirming BSE in September 2001, the government of Japan enacted many of the same regulations adopted by the European Union. In regard to feed controls, all meat and bone meal (MBM) is prohibited from being fed to bovines. Porcine and marine mammal derived MBM is banned from the rations of pigs and chickens as well. MBM from poultry produced separately may be fed to pigs and chickens. (Ref. 13)

- These feed control measures appear to have been effective in Japan. Japan has detected a total of 36 cases of BSE (2001-2009) that seemingly peaked in 2006. In 2008 and 2009, only one case/year has been found. To date, with the exception of one case born in January 2002, all other BSE cases have been born prior to the feed ban.

- BSE has also been identified in both Canada and the United States (US). The first case of BSE in Canada was reported in May 2003 and the first native-born case in the US was identified in 2004. Both Canada and the US prohibited the feeding of most rendered mammalian proteins to ruminants in 1997. It is evident by the Canadian BSE cases born between 2000-04 that this was not 100% effective.

- In Canada as of July 12, 2007 SRMs (same list as removed from food for humans) are prohibited from being included in any animal feed including pet food or fertilizer.

- As of October 2009, the US expanded the 1997 feed ban to prohibit the feeding of certain high risk cattle materials in all animal feed. This list includes: 1) the entire carcass of BSE-positive cattle, 2) the brains and spinal cords from cattle 30 months of age and older, 3) the entire carcass of cattle not inspected and passed for human consumption, unless the cattle are less than 30 months of age or the brains and spinal cords have been effectively removed, 4) tallow derived from BSE-positive cattle, 5) tallow derived from cattle material prohibited in animal feed (CMPAF) that contains more than 0.15% insoluble impurities and 6) mechanically separated beef derived from CMPAF.

- Many countries not reporting BSE have taken some precautionary feed control measures to prevent an internal recycling of the BSE agent if it were to be introduced into the animal feed chain. The measures usually include a ruminant to ruminant or mammalian to ruminant ban. Some countries have also excluded SRMs from animal feed and set parameters for rendering. For example, as of 2001 Australia prohibits the feeding of any material taken from a vertebrate animal other than tallow, gelatin, milk products or oils extracted from poultry and fish. It includes rendered products such as blood meal, meat meal, meat and bone meal, fish meal, poultry meal, feather meal, and compounded feeds made from these products to be fed to ruminants. In 2002 Argentina enacted a mammalian to ruminant ban.

Europe looks to the future

- Recognizing the successes in the control efforts for BSE, in 2005 the European Commission (EC) published the TSE Roadmap (Ref. 14). This Roadmap laid out the short, medium and long term strategic goals of the EC in relation to TSE control measures. For the feed ban, the Roadmap defined the strategic goal as the relaxation of certain measures when certain conditions are met. In particular, four issues requiring re-consideration were identified:
  - Presence of bone fragments in sugar beet pulp and other feeding stuffs
  - Presence of fishmeal in milk replacer for ruminants
  - Lifting feed ban provisions for non-ruminants
  - Possible need for future provisions on tallow

The first two elements have already been dealt with, as laid out above. There is no scientific evidence that indicates a current need for provisions on tallow. The TSE Roadmap has been revised and a 'TSE Roadmap 2' has been adopted by the European Commission (Ref. 15). In this document, two future policy options are mentioned regarding the feed ban: 1) A tolerance level for PAP in feed for farmed animals may be proposed. 2) Feed ban provisions for non-ruminants may be lifted. While intra-species recycling as well as feeding PAPs of ruminant origin to any livestock will remain forbidden, non-ruminant proteins in feedstuff intended for non-ruminants might be reauthorized. Specifically, the feeding of porcine proteins to poultry and poultry proteins to pigs is under consideration.

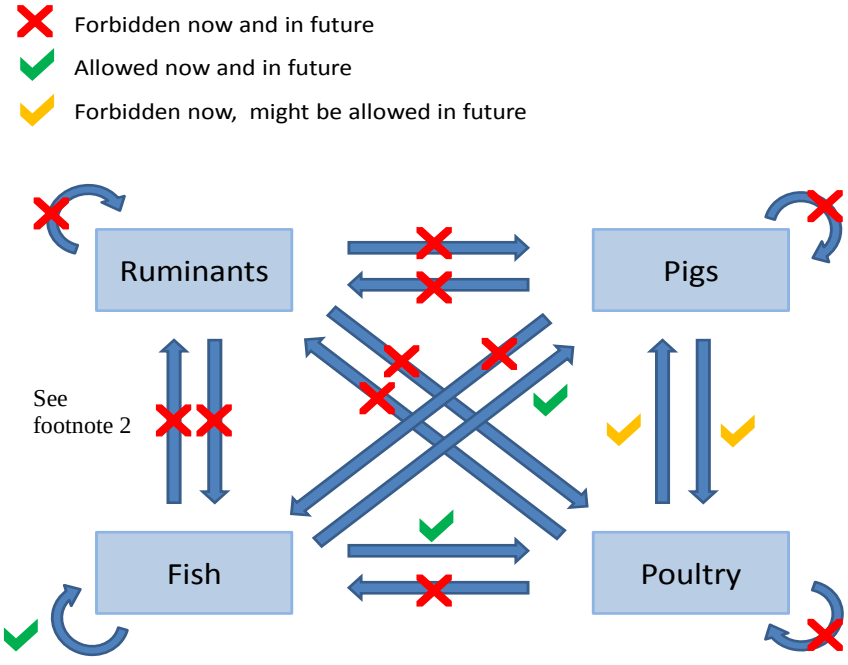

Figure 1:
Schematic and simplified representation of feed ban provisions of farmed animals according to EU TSE Roadmap 1 (current) and 2 (future).

Evaluation of these possible future developments

Disease considerations

- In Europe there seems to be general support for the opinion that feeding any animal proteins to ruminants[2] should remain forbidden to ensure that the BSE epidemic will not be revived and to respect the herbivorous nature of cattle and sheep. That particular feed ban was at the core of the hugely successful control of the BSE epidemic in Europe.
  The inclusion of non-ruminant feed in the BSE feed ban regulations was not a result of a direct and proven TSE risk to, or arising from, non-ruminants, but rather the consequence of the complexity of the rendering and feed industry and the limited diagnostic capabilities.

- Prior to the total feed ban, the production processes for ruminant and non-ruminant feed were not separated completely. During rendering processes, feed production, storage or transportation there was ample opportunity for ingredients of non-ruminant feed to contaminate ruminant feed and vice-versa. Despite previous feed bans, ruminant feed therefore continued to contain ruminant proteins, and crossfeeding of ruminants with non-ruminant feed containing ruminant proteins remained a possibility. The number of BSE cases born after ruminant-to-ruminant feed bans or mammalian-to-ruminant feed bans clearly demonstrates that in practice such feed bans were not sufficiently effective in preventing new infections. This was true for Europe and seems to be the same at least in Canada. Prior to finding the first case of BSE in Japan there was only a voluntary feed ban. After the initial case, Japan adopted more stringent and broader measures than the ruminant to ruminant or mammalian to ruminant ban.

- While maintaining the total ban of PAPs in ruminant feed alone would in theory (e.g., under ideal, controlled conditions) be sufficient to protect cattle and sheep from exposure to potentially infected material, erroneous cross-contamination, labeling errors and fraudulent misconduct could lead to some contamination with PAPs in ruminant feed if they were to be allowed for non-ruminants. Inspections and testing (see below) can reduce, but not eliminate such a risk.

- Even if PAPs would, unlawfully or unintentionally, end up in ruminant feed, they would pose no known TSE risk under the assumption of two important, jointly sufficient conditions:
  1) That the PAPs stem exclusively from non-ruminants. With the complete ban of ruminant material being rendered into feed for farmed animals this assumption is very likely to be met, although pet feed could be a source of contamination.
  2) That non-ruminant proteins can under no circumstances trigger the development of TSE diseases in ruminants even if fed to them. According to an EFSA opinion (Ref. 6) there is no evidence to suggest the contrary and EFSA considers the risk of transmitting BSE to pigs utilizing poultry PAPs (and vice versa) as negligible. On the other hand, there is also only weak evidence to actively support the scientific validity of this assumption. Additionally, pigs have been shown to be susceptible to infection with TSE-material of ruminant origin by parenteral challenge, but experimental transmission of BSE to pigs by the oral route has been unsuccessful (Ref 16). Given the current paucity of the experimental evidence, the condition cannot be considered completely satisfied, since the absence of evidence does not constitute evidence of absence.

- No spontaneous development of TSE-like disease has been observed in pigs, but it is plausible to assume that pigs can develop such diseases as a very rare event and if left alive long enough. Multiplied by the number of live pigs – close to 1 billion worldwide – that would result in a non-negligible number of pigs with TSE. On the other hand by far most, if not all, pigs slaughtered for human consumption do not live to be even 1 year old.

[2] With the exception of fish meal in milk replacers

- If pig-meal is allowed as feed to poultry and vice versa then a closed loop of material could be established provided that undigested pig proteins contained in the gastrointestinal tract of poultry is fed back to pigs or the other way round. This loop can be prevented if all gastrointestinal tracts and their contents are removed and discarded before the rendering of animal by-products. This requirement would be – like all other risk reduction measures – subject to error and fraud, but add to the redundancy of risk management.

- In the light of the evolving BSE epidemic, the zoonotic potential of BSE and consumer concerns, the authorities were therefore forced to take drastic measures and exclude all animal proteins from all feed for farmed animals, with a few exceptions as outlined above.

- By 2010, the BSE epidemic appears to be phasing out. In 2001, 2,167 BSE positive cases were detected within the framework of the EU surveillance activities. By 2008, this number had fallen to 125, 17 times less. Also the number of BSE cases detected per 10,000 animals tested had fallen dramatically: 2.55 BSE cases per 10,000 in 2001 against 0.12 BSE cases per 10,000 in 2008, a 21-fold reduction (Ref. 10). This also implies that the probability has diminished significantly that infected cattle erroneously enter the feed production chain.

Emerging Disease Considerations

Atypical BSE and other TSEs

- For almost the entire two decades that BSE had been known in the world it was thought that there was only one "strain" that infected cattle and caused disease in other species such as humans (Refs. 17, 18).

- In 2004, cases of a bovine prion disease molecularly different than those already documented as classical BSE were described by scientists in both Italy (Ref. 18) and France (Ref. 19). In both countries the cattle were over 8 years of age. The Italian cases (11 and 15 years of age) named bovine amyloidotic spongiform encephalopathy (BASE) were characterized by an unglycosylated protein band with a lower molecular mass (thus named L cases) and the predominance of the monoglycosylated band. In addition, immunohistochemical detection of PrPres in these cases found greater deposits in the cerebral cortex and thalamus versus the brain stem, as is characteristic of classical BSE. The French cases found a higher molecular mass associated with the unglycosylated protein band and were called H cases. The different "strains" are now called atypical BSE.

- Atypical BSE is a study in progress with more unknowns than knowns. One of the most important of the unknowns is the significance of atypical BSE in regard to human and animal health.

- Since these two publications, additional cases of atypical BSE have been found in other countries. H cases have been detected in Canada, France, Germany, Japan, the Netherlands, Poland, Sweden, Switzerland, the United Kingdom and the United States. L cases have been diagnosed in Belgium, Canada, Denmark, France, Germany, Italy, Japan and Poland.

- It has now been shown that both the L and H types of atypical BSE are experimentally transmissible via the intracerebral route. L type BSE has been transmitted to wild-type mice, bovinized, ovinized and humanized transgenic mice, Cynomolgus monkeys and cattle (Refs. 20, 21, and 22).

- H cases have been transmitted to bovinized transgenic (Tgbov) and ovinized transgenic mice (Ref. 23) and cattle (personal communication March 2009).

- Early studies provide some evidence that L type (or BASE) BSE may be more virulent for primates including humans (Refs. 21, 24, and 25).

- Studies on the oral route are underway. These would provide data to evaluate the potential for natural transmission of the disease.

- Atypical BSE may arise spontaneously in a small proportion of cattle. The existence of sporadic CJD in humans has led to postulation that disease could arise spontaneously in any animal, but this theory like others has not been proved.

- In the US one of the H-type BSE case was found to be associated with the novel mutation E211K within the prion protein gene (Prnp) suggesting that this strain may have a genetic origin (Ref. 26).

- As per the SEAC: „There are too few data to enable an assessment of the natural transmissibility of L- and H-type BSE between cattle, or to sheep or goats. The present feed control measures which prevent feeding of mammalian meat and bone meal to ruminants would limit the spread of these forms of BSE to cattle, sheep and goats should they be transmissible to these species by the oral route." (Ref. 38).

Atypical Scrapie

- In 1998, scientists in Norway discovered a previously uncharacterized strain of scrapie that is now called Nor 98 or atypical scrapie (Ref. 27). Certain epidemiological evidence indicates that atypical scrapie may be a sporadic disease (Ref. 28), however additional research is underway to examine the likelihood of natural transmission and the extent of tissue distribution.

- As with atypical BSE, there are few data on the potential for natural transmission of the disease to sheep and other species. The disease has been transmitted to sheep however the route was intracerebral (Ref. 29). Studies investigating the possibility of oral transmission are underway.

- There is some evidence from transmission studies utilizing porcinized transgenic mice that pigs may be susceptible to atypical scrapie and BSE in sheep (Ref. 30). These studies do not involve the natural host or route of transmission so caution may be taken in drawing conclusions.

Potential for TSEs in Other Species

- Studies conducted at the National Institutes of Health Rocky Mountain Laboratory caution against assuming that animals which do not become clinically ill are not infected. There is experimental evidence to indicate that certain species may become carriers (i.e., become infected, shed agent but do not progress to clinical disease) (Ref 31, Ref 32, Ref 33). Specifically, mice inoculated with 263K hamster scrapie demonstrated a phase of inactive persistence. That is, after exposure the mice had a prolonged period (approximately one year), where there was no evidence of infectivity or PrPsc. This was followed by a period of an increasing infectivity and agent adaptation. Many of the mice continued to be devoid of detectable PrPsc.

- It is important to determine if this persistence and adaptation could occur naturally as it may have significance in feeding programs which continually expose species other than ruminants

to TSE infectivity. The results of Race and colleagues, warns that an inactive persistent phase might not produce detectable PrPsc, yet tissues may harbor infectivity (Ref 32).

- Very recent research provides illustrations of the accumulation of infectivity in tongue and nasal mucosa from terminally diseased field cases and experimentally challenged cases of BSE even when no abnormal PrP was detectable (Ref 34). This same phenomena has also been reported for peripheral tissues collected from sheep with atypical scrapie. (Ref 35).

Diagnostic considerations

- The correct implementation of the feed ban is verified by testing feed samples. As stated above, 4 diagnostic methods are currently available, however only classical microscopy is the official method for EU feed controls (Ref. 35). Classical microscopy and near-infrared microscopy (NIRM) focus mainly on the detection of bone fragments, immunoassays and PCR focus on the detection of specific proteins and DNA targets respectively. Each method has advantages and disadvantages, which will be discussed below.
  - Classical microscopy and NIRM are unable to determine the animal species of animal proteins. They can only distinguish between fishmeal and proteins from terrestrial animals, but have the advantage that heat treatment of the ingredients does not affect their ability to detect animal proteins in feed samples. The limit of detection for these two methods lies around a contamination rate of 0.1% (Ref. 6).
  - Immunoassays are able to determine animal proteins up to the species level. However, the sensitivity of the assays is dependent on the composition of the sample. In some cases, the immunoassays can lead to false-positive results, when authorized products contain the same target proteins as prohibited products. Finally, certain target proteins may only be present in specific tissues, and the tissue composition of the product may therefore affect the efficacy of the immunoassay. Heat treatment of the feed ingredients does not affect current immunoassays up to approximately 141°C (Ref. 6).
  - PCRs can distinguish between animal species based on DNA differences to a contamination level of 0.1%. Previous problems with heat treated samples appear to have been overcome by improved PCRs up to a temperature of approximately 141°C, but further validation efforts are needed to confirm this. The main drawback of PCR is that it is not able to distinguish between authorized and prohibited animal proteins within a species (Ref. 6).

- With currently available tests, there are two problems that would face official feed controls if the non-ruminant feed ban were to be relaxed:
  - First, all diagnostic tests have a certain limit of detection. That implies that very low levels of contamination of feed samples with prohibited substances would not be detected. This situation is not different from the current situation.
  - Second, the current official diagnostic method, classical microscopy, cannot distinguish between different terrestrial animal species. It could therefore not be verified whether the new feed regulations for pig and poultry feed are implemented correctly, i.e. it cannot be verified that ruminant proteins are not included in feed and that intra-species feeding is not occurring. The implementation of the feed ban for ruminants can still be verified, because a zero tolerance for PAPs in ruminant feed continues to be in place.

Consumer considerations

- It should carefully be ascertained whether consumers are willing to accept the partial lifting of the feed ban for non-ruminants. Consumer acceptance should be investigated by established consumer science methods and judgments on consumer acceptance should be made on scientific evidence thus established and not on personal opinions and impressions. Also retailer acceptance needs to be investigated.

- In addition to concerns about the BSE health risks, consumers may in the wake of the BSE crisis have developed ethical views on appropriate and non-appropriate feeding practices. Even though pigs and poultry are omnivorous species and animal-based feed is thus part of their natural diet, some consumers may view cross-feeding of pig and poultry material with some suspicion, especially if this results in intraspecies feeding (i.e., pig protein crossing back into pig feed).

- These concerns should be taken seriously, because they could lead to a loss of consumer confidence if not addressed adequately. Timely and clear communication will be needed to discuss with consumers the rationale for the relaxation of the feed ban both with regard to BSE risk and with regard to acceptable feeding practices.

Nutritional considerations

- The consumption of animal protein is not part of the natural diet of ruminants. In contrast, pigs and poultry are both omnivorous species, and thus feeding animal proteins to them does not per se violate their natural dietary habits. Also, animal proteins have aminoacyl compositions that closely match the nutritional needs of other animals – closer than plant-based proteins - and are therefore a valuable feed material (Ref 37).

Economic and ethical considerations

- Use of animal proteins as feed ingredient is also an economic use of a valuable product. In 2002, the EC estimated that 16 million tons of animal by-products would have to be destroyed annually as a result of the feed ban. In the light of a quickly intensifying competition for resources between the demands for human food, animal feed and biofuels, such a large-scale destruction of biological material will appear to many as a regrettable loss if not irresponsible waste. The quantitative dimensions of this loss are hard to estimate, but the direct economic effects were assessed at €1.5 billion due to loss of value of animal by-products, €0.7 billion due to replacement costs of animal by-products by other feed ingredients and another €3 billion due to cost of disposal of animal by-products (Ref 35). Currently, a part of the meat and bone meal produced in the EU is used for pet food–which is still allowed under certain conditions – and the remaining part is used as a fuel source for the generation of renewably energy, as fuel for cement industry, placed in land fillings or incinerated.

- The growing demand worldwide for animal protein in the human diet is putting increasing pressure upon the environment and upon the availability of human food crops, as available land is needed for the production of animal feed. The removal of large quantities of animal protein from the animal feed system as a result of feed bans such as those in place to control TSE's in farm animals only exacerbates this pressure. It thus raises serious questions about the fair allocation of resources for human food worldwide, as well as questions of environmental ethics and sustainability. These ethical concerns need, of course, to be balanced against the ethical implications of any increase in the risks to human health that might result from the re-introduction or continued practice of recycling animal protein in the animal feed system.

- For many people, the substantial wastage or non-use of animal products, raise additional ethical issues for the very system of animal farming and slaughter. This system places substantial stress and suffering upon many animals, especially under the conditions of highly intensive farming, transportation and slaughter of animals. These practices, which for many people already approach the limits of ethical justification, are ethically compromised even further if significant portions of the animal protein obtained by this use of animals are wasted.

Key issues to deal with before the feed ban for non-ruminants can be relaxed
In our opinion, several key requirements need to be met before the feed ban for non-ruminants can be relaxed:

- The feed industry needs to ensure the following:
  - Ruminant materials remain excluded completely from the entire feed chain. This requires a complete and reliable traceability system for both ruminant and non-ruminant materials.
  - Intra-species feeding is prevented entirely. This requires that pig and poultry by-products are prevented from mutual cross-contamination by dedicated separate logistical pathways from slaughterhouses through rendering and feed production processes.
  - No animal proteins are included in ruminant feed. This requires that the ingredients for and the production of ruminant feed is completely separate from the ingredients for and the production of non-ruminant feed.

- Scientific knowledge required:
  - Diagnostic tools must be developed with the capacity to verify compliance with any revised feed ban. These tools must be able to differentiate between PAPs from different animal species, and – in case it is decided to implement a tolerance level for contamination of feed – they must be able to determine if the level of contamination exceeds the defined tolerance levels.
  - More research is needed to support the assumption that non-ruminant proteins cannot induce TSE-like diseases in ruminants, even if these diseases circulated among different non-ruminant species beforehand.

- The authorities need to ensure the following:
  - Competent authorities have the means and capacity to monitor the feed industry closely and assess their capacity to comply with the remaining feed ban regulations BEFORE any changes are allowed to proceed.
  - Legislation is in place to hold the industry liable in case of breaches of the remaining feed ban.
  - Appropriate diagnostic tools are registered and validated to verify compliance with the feed regulations.

In the view of TAFS, taking into consideration all of the scientific and epidemiological knowns and unknowns, the fact that the requirements as listed above are currently not met and acknowledging the potential for fraudulent behavior, a relaxation of the feed ban at the present time would not eliminate all risks. We feel strongly that maintenance of the ban is the only means to drive the level of risk toward zero.

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