EUROGROUP FOR ANIMALS

BRIEFING

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THE WELFARE OF CATTLE FINISHED ON FEEDLOTS

INTRODUCTION

The "Hormone-free Beef" tariff-rate quota and cattle welfare

In 2019, the EU and the US renegotiated the terms of the EU's *hormone-free beef* tariff-rate quota (TRQ). As soon as these negotiations were announced, in March 2018, Eurogroup for Animals voiced its concerns over this trade instrument, and more specifically over the method of production requirements listed for the meat products to benefit from the TRQ.

The *Hormone Free Beef* TRQ[1] was set up by the EU in 2012, as a compensation to avoid tariff retaliation by the US after the WTO negative ruling on the EU's import ban on hormone-fed beef. The TRQ was built to favour US products by listing "method of production" requirements fitting the US model, which relies on feedlots (see box).

The TRQ provided duty free access to the EU market to 45,000 tonnes of *high quality beef*, described as *"Beef cuts [that] are obtained from carcasses of heifers and steers less than 30 months of age which have only been fed a diet, for at least the last 100 days before slaughter, containing not less than 62 % of concentrates and/or feed grain coproducts on a dietary dry matter basis, that meets or exceeds a metabolisable energy content greater than 12,26 megajoules per one kilogram of dry matter"*. By imposing a diet mostly based on grains, these requirements implicitly impose the use of feedlots.

[1] Commission's implementing regulation 481/2012, 7 June 2012, Annex 2

In the reviewed TRQ, now allocating explicitly 35,000 tonnes to US products only, this definition has not been modified. The only positive outcome is that other beef producing countries, such as Argentina and Uruguay, will have less incentives to further switch their mode of production to feedlots in order to benefit from the TRQ, as only 10,000 tonnes are now available to them.

Following these developments and the increasing use of feedlots to produce beef, even in Europe, it has become essential to clarify the very detrimental impact of this method of production on cattle welfare. This briefing illustrates the harmful effects on animal health and welfare of common industry practices when finishing cattle on feedlots.

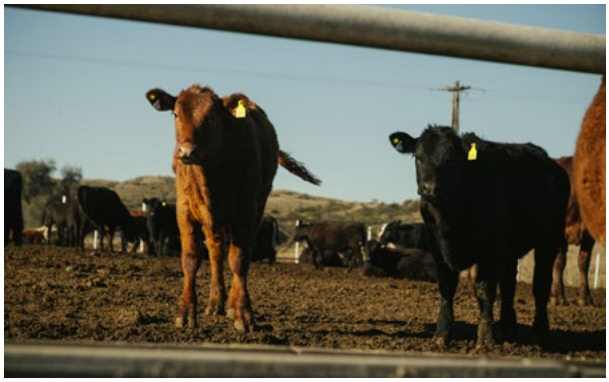
INDUSTRIAL BEEF PRODUCTION IN THE US

Matt Hayek, a professor in environmental sciences at New York University, provides an accurate description of common industry practices of industrial beef production in the US: "Beef cattle in the US spend most of their 18 month-long lives in wide open fields. In the first few months of their lives, calves raised for beef drink their mothers' milk. Then, they eat grass, hay, and a few minerals and crop residues like wheat straws to keep them growing steadily. When their skeletons have grown to their full size, the cattle are placed on feedlots to gain as much fat and muscle weight as possible right before slaughter. This process is often called "finishing"." During the "finishing" process, which lasts 150 to 240 days on average, producers gradually transition the animal from a diet predominantly comprised of forage to a diet highly concentrated in grain, with concentration reaching level as high as 90%.

RESPIRATORY DISEASES

Animals on feedlots disproportionately suffer from BRD (**bovine respiratory disease**), which is **the number one cause for cattle death under such rearing conditions**, followed by digestive problems, difficult calving, and death resulting from extreme weather conditions. BRD is a multi-factorial problem caused by exposure to **fine dust**, especially in dry weather conditions, and **endotoxins** from dried manure, combined with heat stress and metabolic disorders. Viral and bacterial infections can also cause respiratory diseases, which find fertile grounds in animals with weak immune systems. According to the US Department of Agriculture (USDA), respiratory diseases resulted in the death of over one million animals in 2010, or 28% of non-predator causes of death of the total US herd.[2] Up to 50% of young animals in the US are weaned on the day they are transported to the feedlots, which constitutes a major animal health and welfare issue.[3] This could be prevented by pre-weaning and vaccinating calves prior to moving them to feedlots.

The factors leading to feedlot dust pneumonia also adversely impact human health as workers on beef feedlots also suffer more from respiratory diseases.[4] The ammonia released from feedlots contributes to the formation of fine particulate matter (PM2.5), a major environmental risk to human health. A 2011 study[5] found that: *"PM 2.5 formed from ammonia emitted from livestock operations were estimated to contribute on average from 5 to 11% of the total PM2.5 concentrations. In certain areas (North Central, for example) and in cool weather, farm animal contribution to atmospheric PM2.5 concentration may be as much as 20%."*



DIGESTIVE PROBLEMS LINKED TO HIGH-CONCENTRATE DIETS

After respiratory diseases, grain overload (**acute ruminal acidosis**) is the most common disorder among feedlot cattle.[6,7] Because the digestive system of cattle is best adapted to roughage provided by grass-based diets, the most natural way for cattle to eat is to graze throughout the day. Maintaining normal rumen function on grain-rich feedlot diets is a constant challenge for the industry as **one quarter of cattle mortality on feedlots can be attributed to digestive disorders**.

When given high ratios of concentrate, cattle commonly suffer from digestive problems: the starches in concentrated diets are too quickly digested and fermentation acids build up, thus disrupting the normal function of the rumen. Abnormal rumen function and digestive disorders can lead to acute or **subacute ruminal acidosis** (also known respectively as "grain overload" and SARA), a condition that typically occurs when animals ingest excessive amounts of non-structural carbohydrates with low neutral detergent fibre. Digestive disorders can also be conducive to **bloat**, and, if persistent, **liver abscesses** and foot disorders such as **laminitis**.[8] Animals will display reduced rumen activity, accumulation of fluids in the rumen, and other symptoms such as **diarrhoea** and **dehydration**, liver abscesses, **infections** of the lungs, the heart, and/or the kidneys, and **neurologic symptoms** due to the toxic effects of blood acidosis on neurons.

Acknowledging animal health and welfare issues linked to the practice of finishing beef cattle on feedlots, the OIE issued generic recommendations on the dietary requirements for cattle as follows:

> *"Cattle in intensive production systems typically consume diets that contain a high proportion of grain(s) (corn, milo, barley, grain by-products) and a smaller proportion of roughages (hay, straw, silage, hulls, etc.). Diets with insufficient roughage can contribute to abnormal oral behaviour in finishing cattle, such as tongue rolling. As the proportion of grain increases in the diet, the relative risk of digestive upset in cattle increases. Animal handlers should understand the impact of cattle size and age, weather patterns, diet composition and sudden dietary changes in respect to digestive upsets and their negative consequences (acidosis, bloat, liver abscess, laminitis)."* [9]

2 https://bit.ly/2FYYDk8
3 Tucker et al., 2015, https://bit.ly/3lPAuvV
4 Anderson et al., 2010, https://www.cdc.gov/niosh/nioshtic-2/20043494.html
5 https://www.hindawi.com/journals/tswj/2014/702572/
6 Hernandez et al., 2014, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4247954/
7 Tucker et al., 2015, https://bit.ly/3lPAuvV
8 https://msdmnls.co/34svqHF
9 https://bit.ly/3jrl6nP

Potential toxicity of some feed additives used to mitigate methane emissions

In a 2015 study, Shields and Orme-Evans stress that additives currently being tested to reduce methane emissions from ruminants raise additional animal welfare concerns. In particular, **fumarate** and **nitrates** are described as being potentially toxic to animals. Another potential methane mitigation agent, **sulphate**, is also demonstrably linked to the occurrence of polioencephalomalacia[10] (brain inflammation and necrosis). The study concludes that *"The FAO cautions that more research is needed. Mitigation strategies should steer clear of feeding substances that might endanger the animals, either outright or in the absence of highly skilled management".* [11]

OTHER FACTORS AGGRAVATING ANIMAL WELFARE ON FEEDLOTS

Presence of mud and dust

The presence of **mud** can impact animal health and welfare in feedlots located in areas with high annual rainfall, particularly with yearly precipitation levels above 51 cm.[12] Presence of mud **makes it difficult for cattle to move and to rest**, as animals prefer to lie on dry surfaces, in addition to **compromising hygiene**. Only 26% of cattle finished in feedlots are reported to arrive clean at slaughter, most frequently being dirty or manure-soiled in the abdominal regions and on the flanks.[13] [14] Dirtiness at slaughter, and particular faecal soiling, is a public health hazard due to potential carcass contamination with zoonotic bacteria.[15]

As mentioned above, during the dry season, **dust** can also aggravate respiratory diseases in cattle.

Heat and cold stress

Cattle confined on feedlots can suffer from both heat and cold stress. Heat waves can have a *"significant detrimental effect on beef cattle welfare"* and reports show that heat waves are responsible for the loss of 5,000 cattle heads yearly in the US given that a large portion of beef cattle on feedlots is located in Texas.[16]

According to the same study, *"Heat stress losses are most likely to occur with a combination of high temperatures, high humidity, and low air movement [...]. There are three basic factors that may contribute to heat stress problems in an outdoor feedlot. They are the lack of shade, heavy cattle weights, or cattle with black hides. [...] Compared to twenty years ago, cattle are being fed to heavier weights. Heavier animals have a more difficult time cooling themselves. The diet fed to the cattle can also have an effect on heat stress."*

The health and welfare problems in feedlot-finished cattle are inter-connected. First, the high-grain diet causes digestive and metabolic disorders, which are *per se* potentially fatal. Second, this diet, which is formulated to fatten animals faster, compromises their ability to control thermoregulation. Extreme weather conditions – rain, mud and/or heat waves, which cause dust or mud on feedlots, further expose the animals to numerous health and welfare problems.

Transport from farm to feedlot: lax regulations on transport

The regulations on the live transport of animals in the US impose standards that are well under those set in EU legislation. The federal statute regulating the transport of animals, the well-named *Twenty Eight Hour Law* (49 USC 80509), allows for the transportation of animals from 28 to 36 consecutive hours before being unloaded for five hours for rest, water and food, which is 2 to 2.5 times more than the maximum uninterrupted journey time allowed in EU legislation (14 hours). In the EU, the total trip allowed for bovine (14 hours, with 1 hour break for rest, water and food, then another 14 h travel) is still lower than the maximum of 36 uninterrupted hours foreseen in the US legislation, and that is without counting that after 5 hours, animals can be back on the road endlessly.[17] Provided transport occurs within the border of the same state, relevant state laws apply. However, such state laws usually mirror the Federal statute. Furthermore, although state anti cruelty laws (criminal law) cover the transportation of animals, "customary agricultural practices" benefit from an exemption in roughly half of the states of the Union.

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10 http://ag.ansc.purdue.edu/sheep/ansc442/Semprojs/2002/neurological/polio.htm
11 http://www.mdpi.com/2076-2615/5/2/361/htm
12 As an example, according to the World Bank, Uruguay's precipitation level in 2014 was 130cm.
13 Tucker et al., 2015, https://bit.ly/3lPAuvV
14 Grandin, 2016: https://www.sciencedirect.com/science/article/pii/S2451943X16300278
15 https://www.sciencedirect.com/science/article/abs/pii/S0956713512000436
16 Matthew Hayek, If all of our beef comes from factory farms, why are wide open pastures everywhere?, June 26, 2018, available at: https://bit.ly/2Fk8nFg
17 Council Regulation (EC) No 1/2005 on the protection of animals during transport, Annex I, Chapter V, point 1.

The practice of finishing animals on feedlots involves additional animal suffering compared to the more traditional methods of production, by adding an additional stop to the journey from the farm to the slaughterhouse. A 2015 study by Shields and Orme-Evans[18] lists a number of issues associated with the transport of finishing calves to feedlots: "**Transport** takes a physical and psychological toll on animals. Stressors include unfamiliar surroundings, novelty, noise, vibration, social regrouping, loading and unloading, and feed and water deprivation, although many factors, such as preconditioning and location in the vehicle during the journey can alter the effect. The stress of transport can lead to **immunosuppression** and an increase in disease susceptibility, including the ubiquitous **Bovine Respiratory Disease** (BRD) problem."

LACK OF DATA ON ANTIMICROBIAL USE IN THE US BEEF SECTOR

With the coming into force of the new Veterinary Medicines Regulation [Regulation EU 2019/6][19] in January 2022, the EU will enact further restrictions on the prophylactic (i.e., preventive) and metaphylactic (i.e., for control purposes) use of antimicrobials for the mass treatment of farmed animals, with the obligation of a veterinary prescription for each treatment and stricter record-keeping on farms. However, this regulation will not apply fully to imported products.

The EU already bans the non-prophylactic use of antimicrobials in imported meat productions. From 2022 onwards, these restrictions will be extended to a ban on the use of antibiotics to promote growth or increase yields. However, the new regulation will still permit the administration of antibiotics for therapeutic use in imported meat productions. It will thus still be legal for exporting producers to administer antibiotics to animals kept on feedlots, however massive the volumes are, provided they can demonstrate the antibiotics are used as part of a medical treatment. **Because feedlots cause a large spectrum of diseases in animals, producers can virtually administer large volumes of antibiotics to animals and still comply with EU importations standards.**

Although the Center for Disease Control (CDC) has identified intensive animal farming as a major factor of antimicrobial resistance[20], accuracy in data collection on antibiotics use in beef production in the US is still an issue. Large feedlots are the root of massive use of antibiotics and the data on such use is still lacking. A scientific report published as early as 1998 by scientists at Cornell University and the USDA had identified a highly concentrated diet in grain as a source of infection in cattle, including notoriously deadly infection *E.coli*.[21] However, the fragmented structure of the beef industry in the US – namely the transportation of animals, often over long distances, from their native farm to feedlots – hurdles data collection on the use of antibiotics in this specific sector.[22]

[18] http://www.mdpi.com/2076-2615/5/2/361/htm
[19] https://eur-lex.europa.eu/eli/reg/2019/6/oj
[20] https://www.cdc.gov/foodsafety/challenges/from-farm-to-table.html
[21] http://news.cornell.edu/stories/1998/09/simple-change-cattle-diets-could-cut-e-coli-infection
[22] https://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2018/08/trends-in-us-antibiotic-use-2018

THE FEEDLOT MODEL: NOT AN EXCLUSIVE OF THE US

The major issues identified for the welfare of beef cattle finished on feedlots in the US are by no means unique. This model of production was also used in Canada and Australia, and, due to the incentive created by the EU *Hormone-free beef* TRQ, it has also spread more recently to countries who used to only rely on pasture to feed cattle, like Uruguay and Argentina. The latest investigations carried out by NGOs in feedlot-style operations in Uruguay highlighted extremely severe animal health and welfare problems during all stages of production, including auctioning, transportation, and fattening.[23] Such problems included rough handling, lack of access to sheltered areas, lack of feed or water for prolonged periods of time, presence of unweaned animals (umbilical cord still attached) and emaciated animals at auction sites. On feedlots, frequently documented problems were heavily overweight and soiled animals, overcrowding, mixing of horned and hornless animals, mixing of animals of different ages, presence of mud, lack of shelter for shade with behavioural indicators of heat stress (panting), and lack of veterinary care. As seen in the previous sections, **these factors are not only detrimental to animal welfare but they can pose serious risks to public health when the meat is consumed**. Besides being non-compliant with OIE standards, the visited feedlots were also under several respects non-compliant with EU legislation (Council Directive 98/58/EC).

Worryingly, **we have been witnessing, in recent years, the expansion of the feedlot model to certain regions of the EU**.[24, 25] In addition, in parts of the EU, beef cattle farming is characterized by indoor confinement on hard flooring and slatted flooring during the final or the entire fattening phase, with energy-dense diets that are high in maize. Coupled with the genetic selection for rapid weight gain, these conditions predispose the animals to developing metabolic and joint disorders that can result in lameness,[26] sometimes to such severe extents that it results (or should result) in the emergency slaughter of the affected animals.[27]

Clearly, instead of moving increasingly in the direction of further intensification, there is a need for the EU to introduce specific animal welfare provisions for this sector,[28] and to use its trade policy to incentivise higher welfare in foreign productions.

23 https://www.youtube.com/watch?v=PDFQMHre97k
24 https://bit.ly/34HAqqM
25 https://bit.ly/2SJcGx8
26 https://www.vetjournal.it/images/archive/pdf_riviste/4671.pdf
27 https://journals.sagepub.com/doi/abs/10.1177/0300985816684915
28 https://bit.ly/33SFbPn