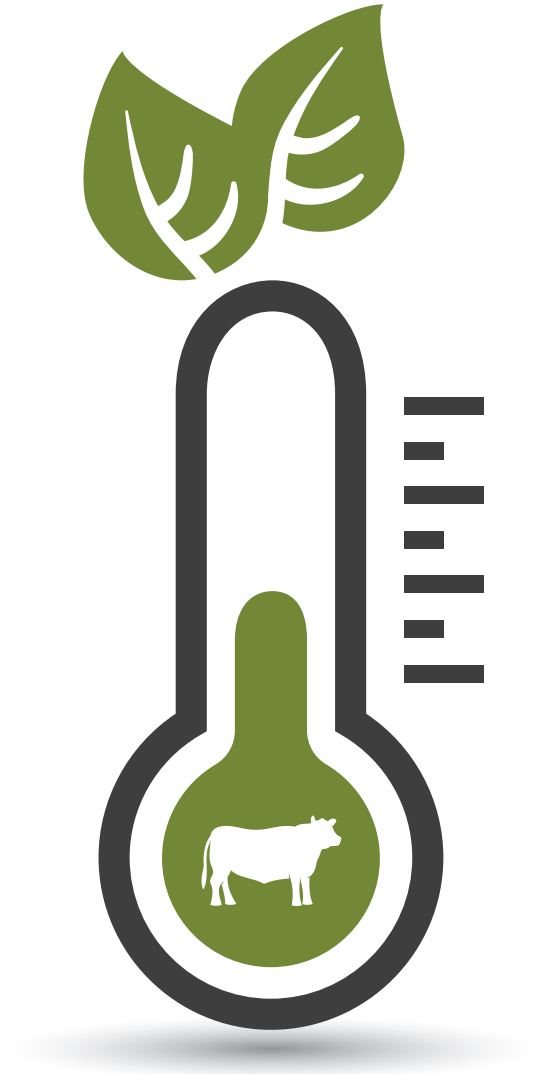

NATIONAL BEEF ASSOCIATION

PROPOSAL TO INCREASE UK BEEF PRODUCTION AND EFFICIENCY IN CONJUNCTION WITH A REDUCTION IN CO_2 EMISSIONS

www.nationalbeefassociation.com

INTRODUCTION:

This is a proposal to be submitted to Government for consideration on how to tackle what we see as the main issues surrounding beef production in the UK.

One of the National Beef Association's major concerns in the light of recent events is food security -the ongoing situation has exposed frailties in the food supply network for all to see. Currently, according to Agriculture and Horticulture Development Board (AHDB)[1], the UK is approximately only 75% self-sufficient in beef production, and our country relies on imported beef to fill this gap. These imports come with their own carbon footprint, which, added to the natural carbon emissions associated with beef production, have given the industry a bad press in recent times. Although Covid-19 has eclipsed all other immediate considerations, a post-Brexit UK is on the horizon, and with it the loss of the Common Agricultural Policy (CAP) and Single Farm Payments. Many farmers will struggle to survive, and this does not help food security.

The majority of cattle slaughtered in the UK are classified as prime cattle, with ages ranging from 10-30 months. If the upper limit of this age range was reduced, it would have significant positive effects upon UK beef industry sustainability, food security, environmental sustainability and the provision of affordable beef to the consumer. The aims of this proposal are as follows:

AIMS:

1. To reduce net carbon emissions associated with UK beef production, with the aim of reaching a carbon neutral status over a set period of time
2. To increase the UK's beef self-sufficiency status, ensuring less reliance on imported beef, and improving food security
3. To increase efficiency of beef producers and processors, to help fill the funding gap left by cessation of CAP, and to offer beef to the consumer at a stable price.
4. To decrease the volume of imported beef required, therefore reducing its associated carbon footprint.

From: Neil Shand

ceo@nationalbeefassociation.com

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CURRENT POSITION:

The slaughter age of 'prime' cattle in the UK currently ranges from 10 to 30 months. Although there is no concrete definition of prime cattle, the BSE regulations (1996) required animals destined for human consumption to be slaughtered under 30 months of age – the so-called Over Thirty Months Rule[2]. Although cattle over 30 months can now enter the food chain without testing, prime cattle are still generally considered to be those under 30 months. Major retailers prefer beef that has been slaughtered before 30 months, and these animals will attract a premium price. We are aware of subsequent relaxation of regulations surrounding ages for BSE testing and slaughter. This has no impact on this proposal.

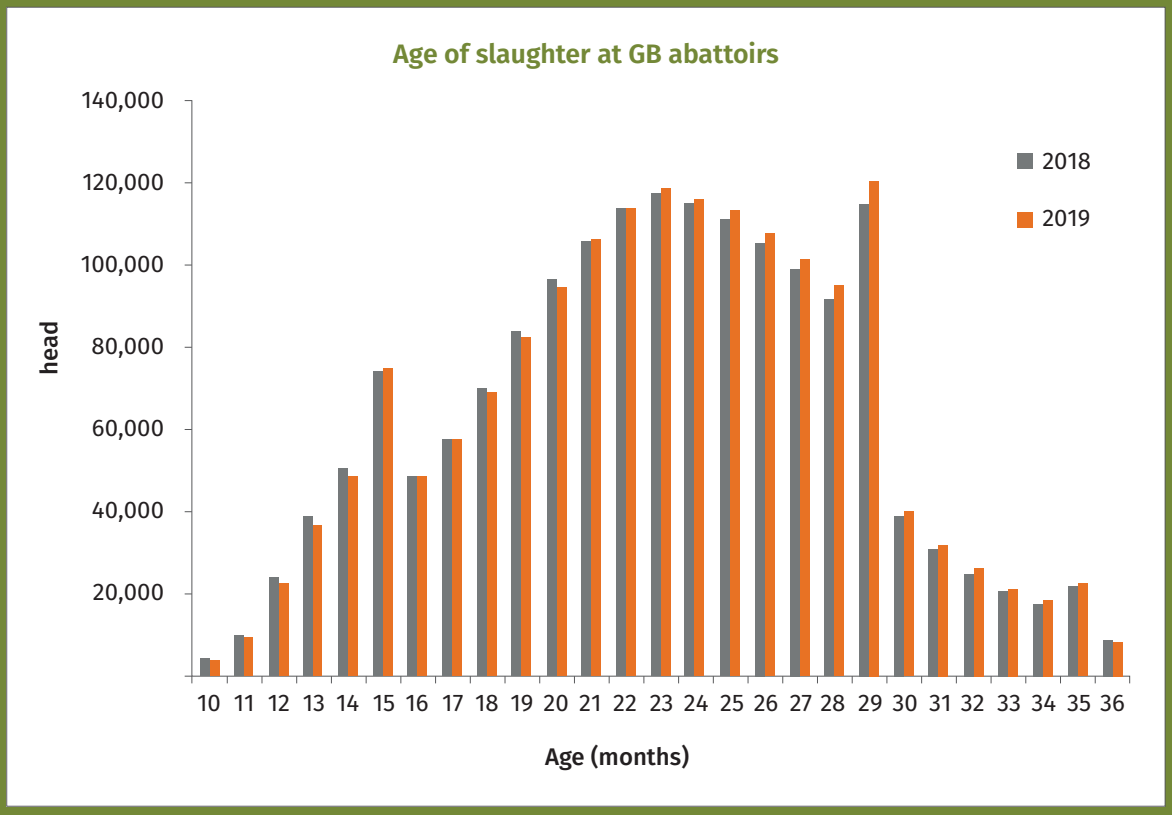
A small number of animals used for rose veal, for which there is a small market, are slaughtered between 10 and 12 months. The majority of prime cattle are slaughtered between 12-30 months.

The range of 12-30 months is large but takes account of different factors:

- mature ages of different breeds; continental suckler cattle will mature earlier, whereas native cattle grazing hard to farm pasture will mature at a later stage.
- poor management, old habits and farming practices; many suckler farms stick to old procedures of second season grazing last year's calves on the old adage of growing frame. Modern genetics mean this is no longer necessary.

In 2019, the AHDB Cattle Yearbook recorded that approximately 1,514,000 cattle were slaughtered for beef between the ages of 10 and 30 months. This figure represents the vast majority of animals entering the food chain. There are a further 102,00 head slaughtered between 31 and 36 months old. This represents potential for the future, but is not covered in the main part of this proposal.

Age of slaughter of cattle in GB abattoirs 2018-19



Carbon emissions of an average animal based on age groups

Slaughter age (months)	Average GHG emissions (kg/d)	Average GHG emissions (kg/mo)
10-11	4.20	128
12-18	5.42	165
19-24	7.54	230
25-30	8.93	272
31-36	9.50	290
>36 mo	9.67	295

PROPOSALS:

Introduce a standard definition of prime cattle: 'prime cattle' is a vague statement with no discoverable definition. We suggest a new definition is adopted, consisting of the two following conditions

- Full-life farm assured – including animal traceability from birth to abattoir
- Slaughtered between 10-28 months of age

Proposed reduction of time on earth for prime cattle: achieved by reducing maximum slaughter age – in two stages - from 30-28 months by August 2023, and to 27 months by August 2025. Initial indications show this removes approximately 160,000 cattle off the planet two months earlier in the first stage, followed by a further 100,000 by the second stage. This allows for a marked increase in cattle numbers, whilst delivering a net zero increase in carbon emissions by replacing high-maintenance, high-feed intake fattening cattle by low maintenance breeding females.

Increasing UK suckler herd by 34,300 cattle by 2025: Redefinition of the age parameters for prime cattle and rose veal allows for an increase in cattle numbers in the UK. Results of this mean:

- Beef production is increased with no net increase in carbon emissions
- Increase in self sufficiency – lower import levels – less lorry journeys – lower carbon emissions
- Increase in producer efficiency – a greater return for a decrease in input costs.

Lowering age for beef classification from 12-10 months: In real terms, this means that all animals between 10 and 12 months would be classified as prime beef, not as rose veal. It allows high performing or genetically superior cattle that are heavy enough to be slaughtered at less than 12 months of age to be classified as prime beef without being penalised. This will mean a minimum of 25,000 cattle will be removed from the system up to sixty days earlier, improving efficiency and environmental considerations.

Environmental tax to be applied to cattle killed over 28 months: this is suggested to be around £100 per head, and revenue could be fed into the ELMS scheme to provide a fund for new entrants and young farmer start-ups. Exclusions to this tax are envisaged to be, but not necessarily limited to:

- Rare native breeds which are used to graze marginal land for conservation purposes.
- Cattle raised for charitable or educational purposes

Addition of the value of retained heifers for herd expansion to be considered part of the Annual Investment Allowance: giving the farmer this tax benefit to offset against the loss of sales provides an incentive to increase suckler numbers, and may reduce the amount of AIA being set against inefficient carbon machinery.

ANALYSIS:

Calculations have been done using GWP100.

Reduction of time on earth for prime cattle:

Stage 1 – removal of 160,000 head of cattle two months early leaves space for 26,000 (one sixth of the number removed) calf-producing grazing females to be run annually with no net increase in carbon emissions. These 26,000 breeding females, at 88% production efficiency (an average defined by SRUC), will produce 22,880 calves which will have the potential, on an average carcase of 350 kilos, to produce 80,008 kilos of home-produced beef over and above current supply.

This 8,008 tonnes will negate the need to import the same volume of beef, reducing lorry transportation by approximately 320 lorry loads. The GHG saving on transportation of imported beef is impressive, and these transport carbon footprint reductions are calculated later in the proposal.

Stage 1. Impact of cutting slaughter age to 28 months (GHG saved in total kg CO2)

Slaughter age (months)	GHG saving (kg CO2) if slaughtered at 28 mo	Number of head	Total saving (kg CO2)	Total saving (tonnes CO2)
29	279	120000	33501299.91	33501
30	561	40000	22455546.49	22455

The direct benefit of reducing the slaughter age from 30-28 months leads to a reduction of **55,956 tonnes** of CO2 per annum.

Stage 2 – removal of 100,000 head of cattle a further month early leaves space for 8,300 calf-producing grazing females to be run annually with zero increase in carbon emissions. These 8,300 breeding females, at 88% production efficiency will produce 7,304 calves which will have the potential, on an average carcase of 350 kilos, to produce 2,500 tonnes of home-produced beef over and above current supply. This 2,500 tonnes reduces the lorry transportation of imported beef into the country by approximately 100 lorry loads; transport carbon footprint reductions are calculated later in the proposal.

Stage 2. Impact of cutting slaughter age to 27 months (GHG saved in total kg CO2)

Slaughter age (months)	GHG saving (kg CO2) if slaughtered at 27 mo	Number of head	Total saving (kg CO2)	Total saving (tonnes CO2)
28	276	90000	24852945.2	24852

Stage two would reduce CO2 emissions by a further **24,852 tonnes** per annum.

Once both stages are implemented, envisaged to be by 2025, a total of **80,808 tonnes** of CO2 can be removed annually from the beef production process, whilst adding an additional annual **10,508 tonnes** of home-produced beef.

Total impact of cutting slaughter age of all cattle to 27 months (GHG saved in total kg CO2)

Slaughter age (months)	GHG saving (kg CO2) if slaughtered at 27 mo	Number of head	Total saving (kg CO2)	Total saving (tonnes CO2)
28	276	90000	24852945.2	24852
29	555	120000	66638560.19	66638
30	838	40000	33501299.91	33501
31	1,123	30000	33683319.74	33683
32	1,411	25000	35263755.11	35263
33	1,700	20000	34006910.53	34006
34	1,992	16000	31874612.66	31874
35	2,286	20000	45720069.97	45720
36	2,581	10000	25808549.27	25808
				331350

The table above shows the potential carbon saving if the slaughter age of all prime beef animals was reduced to a maximum of 27 months; we accept this is currently a stretch too far. However, reducing the age from 36 -34 months by a more achievable 2027 would remove a further **71,528 tonnes** of CO2 annually.

Lowering age for beef classification from 12-10 months:

Thousands of young suckler bred bulls are held back from slaughter until they reach 12 months of age, thus allowing them to be classified as beef and not as rose veal. Many of these animals will eat upwards of 15kg of dry matter a day, and subsequently end up out of market specification and overweight. This is an unnecessary extension of their time on earth, leading to carbon inefficiency - many of these high-performing genetic young animals are ready for slaughter 4-6 weeks ahead of the existing permitted schedule. Rose veal carries a negative value of approximately £1 per kilo, and is not a financially viable product. Most producers retain these animals until they reach the required age to avoid the financial penalty; as a result they end up overweight and carbon inefficient. This could affect as much as 25,000 suckler bred bulls who are currently happily eating away and waiting to reach their first birthday.

Impact of reclassification such that beef can be slaughtered at 10 months rather than 12 (GHG saved in total kg CO2)

Slaughter age (months)	GHG saving (kg CO2) if slaughtered at 10 mo	Number of head	Total saving (kg CO2)	Total saving (tonnes CO2)
12	274	25,000	6,857,082	6,857

This delivers an annual reduction of **6,857** tonnes of CO2, and when combined with stage one of the proposal would deliver an annual reduction in emissions of **62,813 tonnes** of C02 production whilst producing a further **8,008** tonnes of beef.

On completion of stage two, our proposal delivers a total reduction of **87,665 tonnes** of CO2 production, whilst providing an extra **10,508** tonnes of beef.

Transportation carbon footprint reductions:

Stage one of the proposal reduces transport inputs to the UK by 320 articulated loads; stage two by a further 100 loads. The potential saving on the UK imported food carbon footprint is massive.

For simplification, we have based the data on a total of 399 articulated loads coming from three present points of supply, by road in refrigerated lorries.

- a central point in ROI to Manchester
- a point in central Europe (Poland) to Manchester
- a point in Botswana to Manchester.

Assuming equal split between these three countries, there will be 133 lorry loads from each country of origin. The carbon footprint of this transport is detailed below [3]

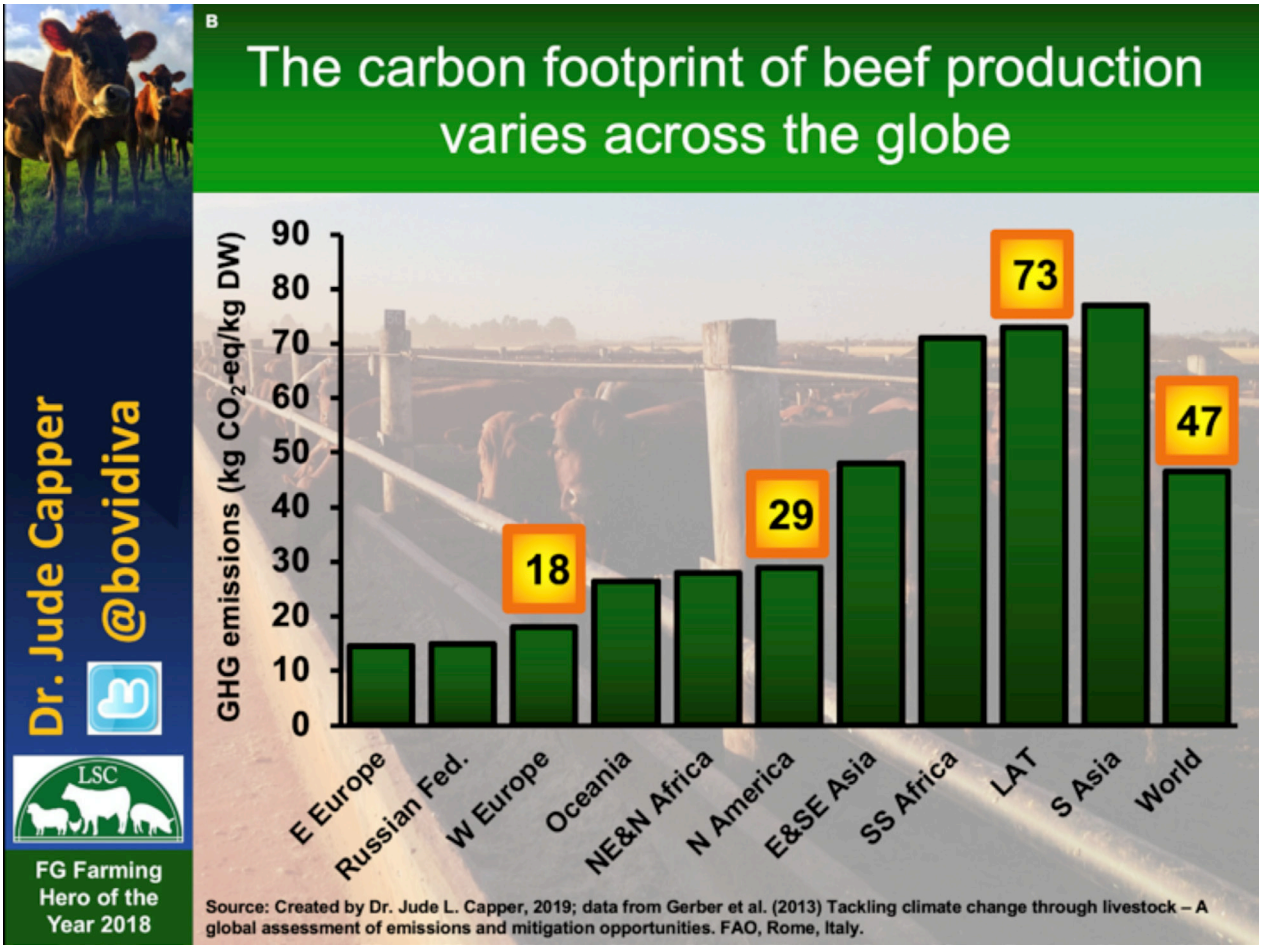
Country of origin	Distance (miles)	Carbon footprint of transport (tonnes)133 loads
Rep Ireland	280	56,620
Poland	1146	226,765
Botswana	7935	1,509,400

The potential collective transport CO2 saving annually from **10,508 tonnes** of imported beef being replaced by home-grown beef is a massive **1.792,785 tonnes**

CONCLUSION:

This proposal allows in excess of 10,000 tonnes of extra beef to be produced in the UK with no net increase in emissions, which could replace beef currently imported from countries with some of the poorest production emissions in the world, namely Brazil, Botswana, Uruguay and Namibia. We believe it is unique in its thinking, and practical in its ability to provide increased food production and security. It delivers considerable reductions in CO2 levels in UK beef production, whilst reducing the impact of imported foods and associated CO2 emissions on a truly major scale. We believe it is a step in the right direction towards taking UK food production to carbon zero.

We believe it is a workable solution to a modern problem. We look forward to your comments, and would welcome the opportunity to expand the ideas and develop the proposal alongside Defra.



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(1) AHDB - Cattle Yearbook, 2019
https://ahdb.org.uk/knowledge-library/the-uk-cattle-yearbook-2019

(2) Food Standards Agency publication 2005
https://acss.food.gov.uk/sites/default/files/multimedia/pdfs/publication/bsebooklet.pdf

(3) Calculations have been made using
https://www.commercialfleet.org/tools/van/carbon-footprint-calculator

Calculate CO_2 by mileage:

Distance		Consumption		Fuel Type	CO_2 produced
286	mi	8	MPG	Diesel	425.72 kg

ROI to Manchester

Calculate CO_2 by mileage:

Distance		Consumption		Fuel Type	CO_2 produced
1146	mi	8	MPG	Diesel	1705.85 kg

Poland to Manchester

Calculate CO_2 by mileage:

Distance		Consumption		Fuel Type	CO_2 produced
7935	mi	8	MPG	Diesel	11811.46 kg

Botswana to Manchester.

All tables and carbon calculations by Dr Jude Capper, using GWP100 data.