

Dr. Jude Capper

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**Livestock
sustainability
– how do we
maintain,
improve and
communicate
it?**

Dr. Jude L. Capper

20th January 2021

Source: Slide and photo by Dr. Jude L. Capper, 2021

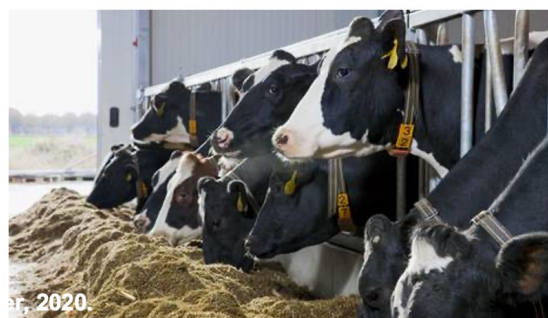
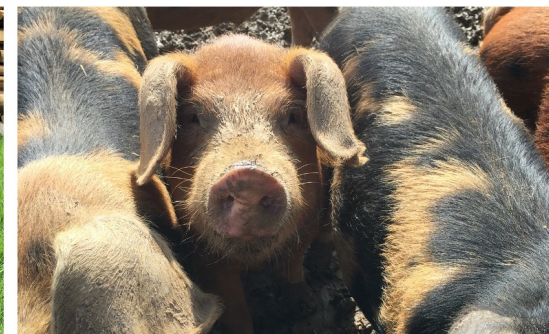
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s

There is no definitive sustainable protein system – but every system can be sustainable

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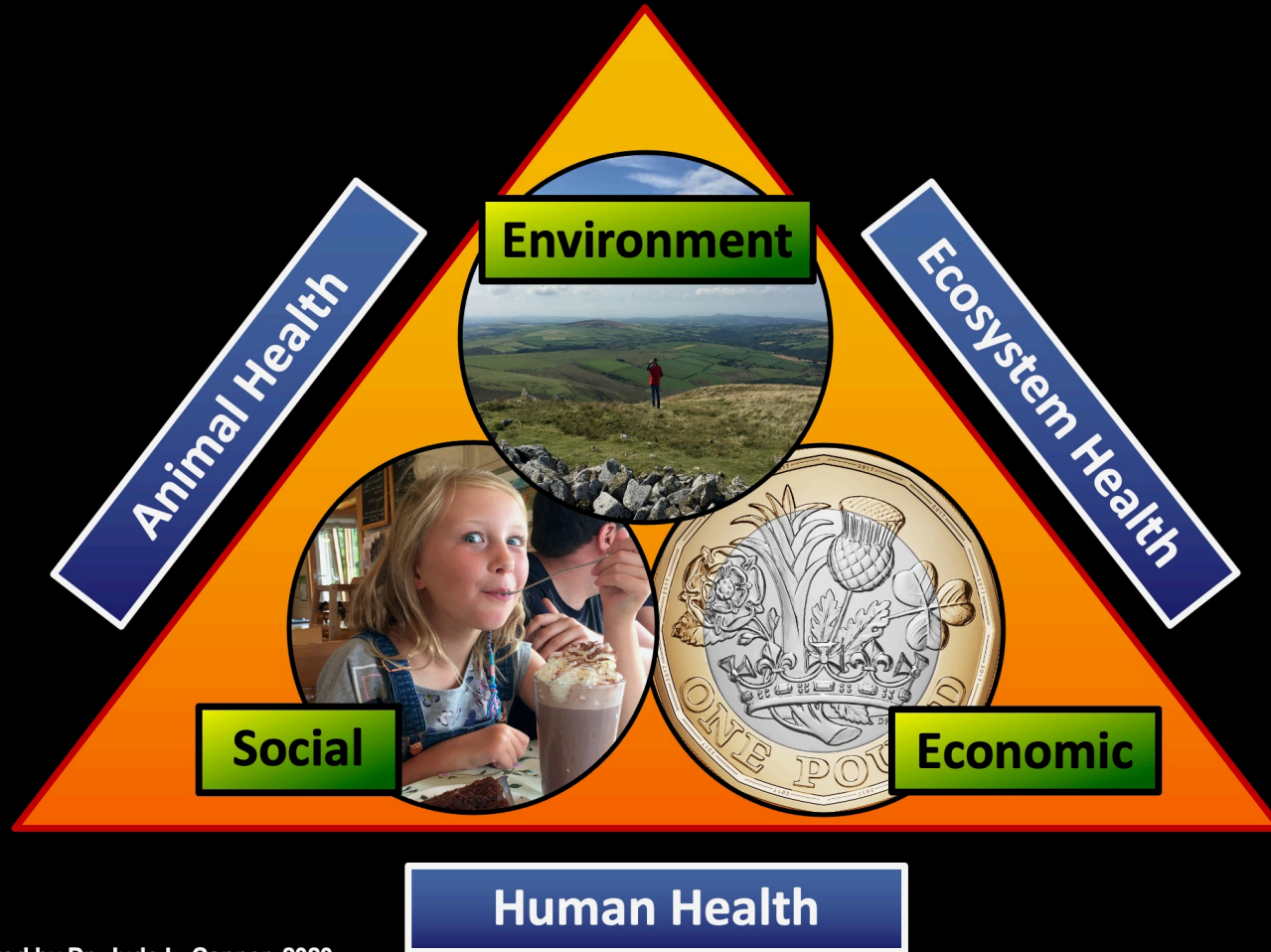


Source: Created and photos by Dr. Jude L. Capper, 2020

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Sustainability comprises three pillars, all under the umbrella of One Health



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Source: Created by Dr. Jude L. Capper, 2020.

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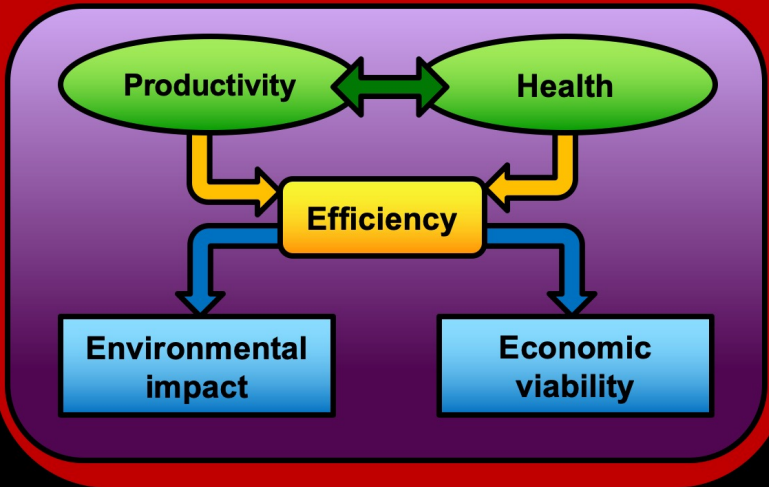
COM

Social acceptability and consumer trust are vital for sustainable livestock production

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Social Acceptability



Sustainability



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Source: Created by Dr. Jude L. Capper, 2020.

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The global livestock industry is under threat

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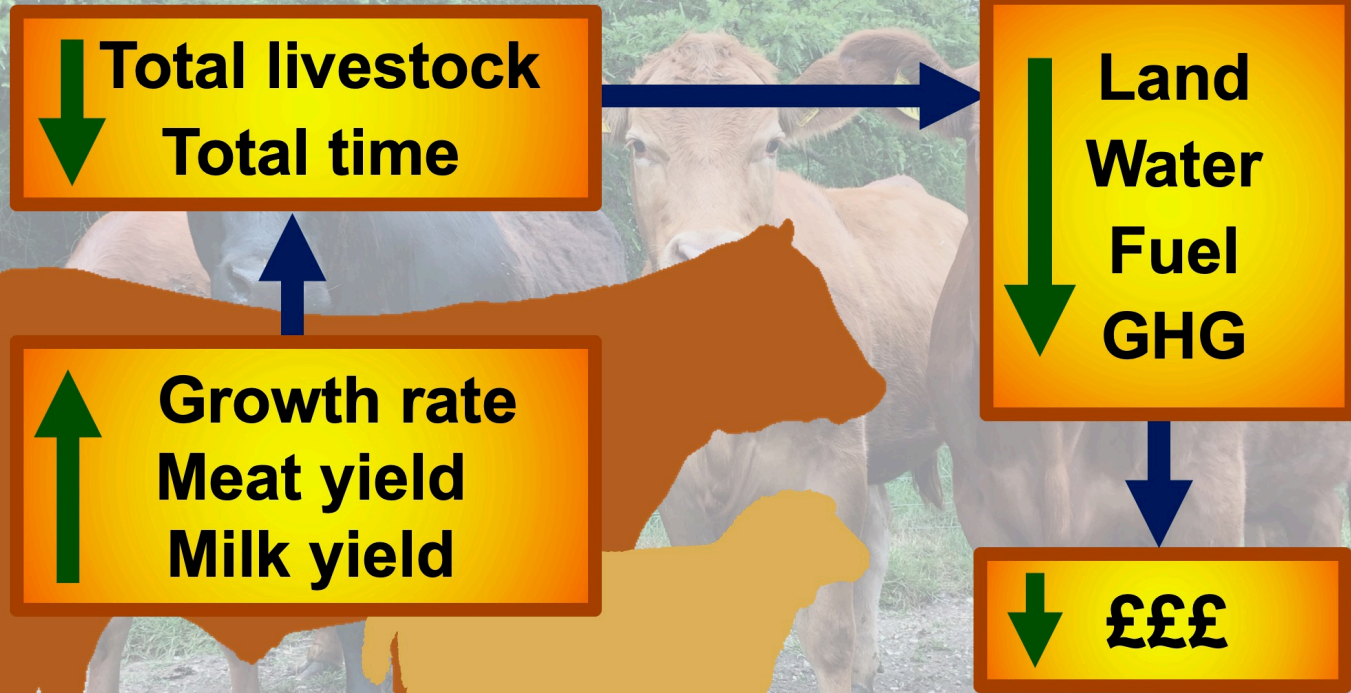
Source: Created by Dr. Jude L. Capper, 2011; Photos from: <http://www.goveg.com/environment-globalwarming.asp>
<http://culturemap.com/newsdetail/09-03-10-is-sex-in-the-shower-killing-our-water-supply-relax-beef-production-is-a-bigger-culprit/>;
http://animals.change.org/blog/view/save_the_animals_save_the_planet_blog_action_day_09_climate_change;
<http://www.peta.org/mc/ads/PAMpartsPETA300.jpg>

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Improving animal productivity reduces the environmental impact of milk and meat



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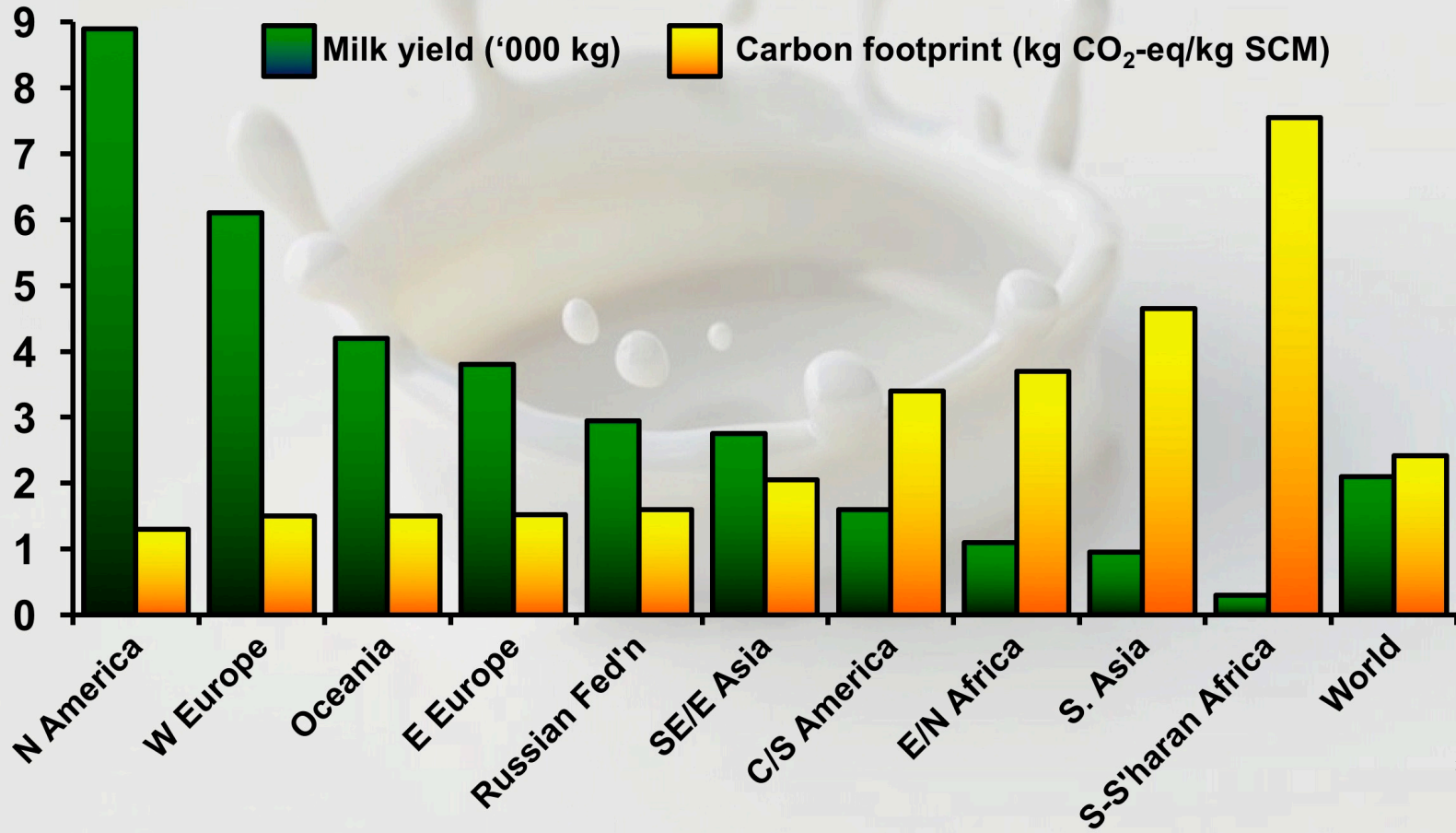
Source: Created by Dr. Jude L. Capper, 2020. Data from: Capper, JL. 2015. Sustainability and One Health. In: Cockcroft, P. *Bovine Medicine*. Wiley-Blackwell, Oxford, UK.

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DS

A negative correlation exists between milk yield and carbon emissions



Source: Created by Dr. Jude L. Capper, 2016; data from: FAO (2010) Greenhouse Gas Emissions from the Dairy Sector. FAO, Rome, Italy.

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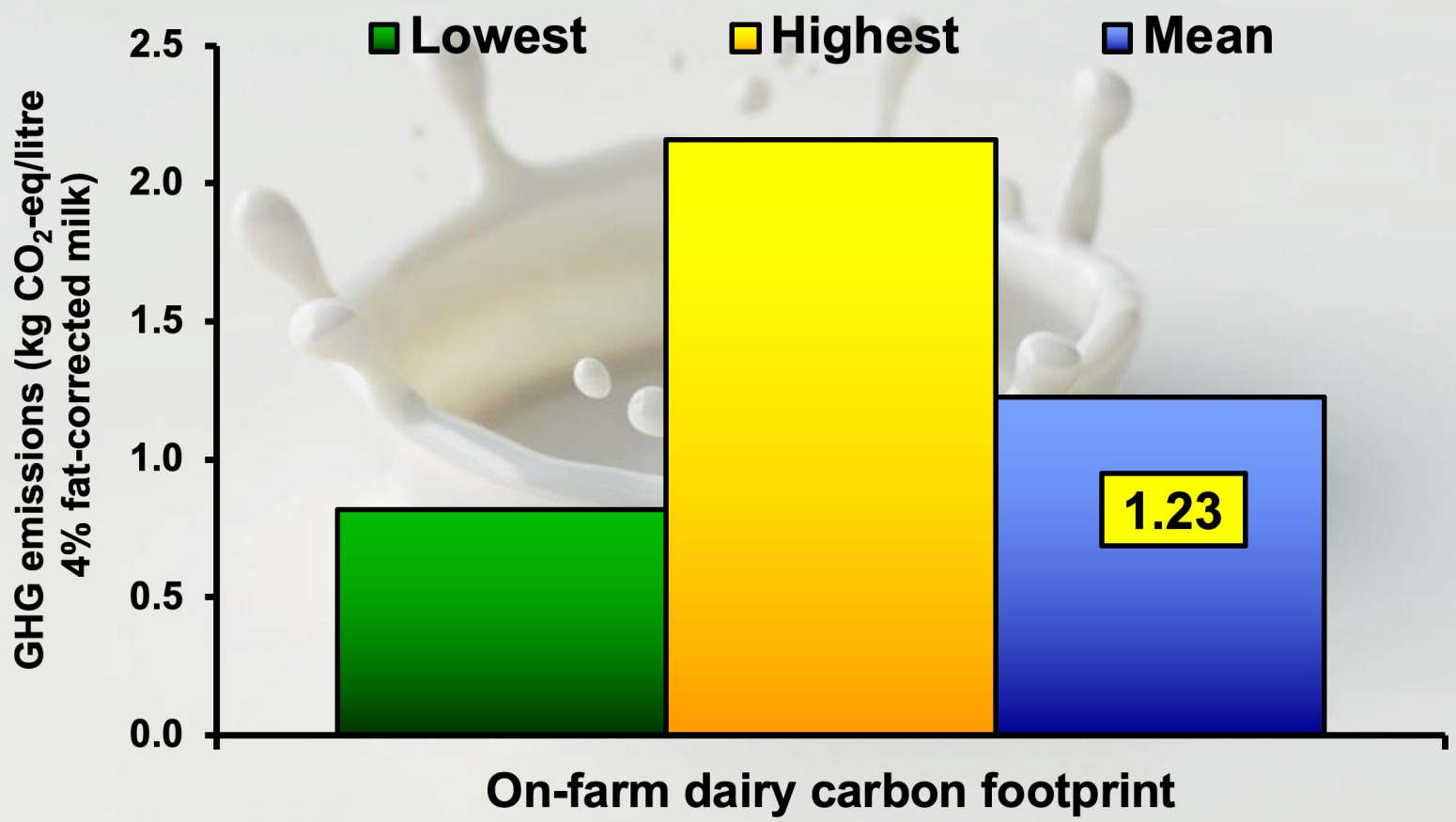


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DS

GHG emissions from UK dairy vary, but were cut by 24% from 1990-2015



Source: Created by Dr. Jude L. Capper, 2020; data from: DairyCo (2013) Greenhouse gas emissions on British dairy farms. AHDB, Stoneleigh, UK and The Dairy Roadmap (2018) The UK dairy roadmap – Showcasing 10 years of environmental commitment. AHDB, Stoneleigh, UK

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D

Improving key performance indicators reduces environmental impact and economic cost

- Nutrition**
- Reproduction**
- Lameness**
- Mastitis**
- Metabolic disease**
- Infectious disease**
- Dry period length**
- Age at first calving**
- Antibiotic residues**
- Feed wastage**
- Pasture management**



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Source: Created by Dr. Jude L. Capper, 2020

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D

What could global dairying look like if we improved health, nutrition and genetics?

Global average yield

2,577
kg

UK average yield

8,140
kg

Dairy cows

-181
million

If all dairy cattle had UK yields, global milk supply could be maintained using 181 million fewer cows (69%).

At US average yields, 200 million fewer cows (75%)

Source: Created by Dr. Jude L. Capper, 2020. Data from: FAOSTAT (2020) <http://www.fao.org/faostat/en/>

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Sustainability indices will be increasingly present on meat labels in future

Beef (animal-based) patty

Nutritional value*

Serving size: 227 g (8 oz) steak

78%

Pure beef protein
- contains no
lab-based
ingredients!

Sustainability index



Carbon footprint (under GWP*)



Water footprint



Antibiotic footprint



Community support rating



Farm webcam and sustainability assessment data



*compared to ideal protein



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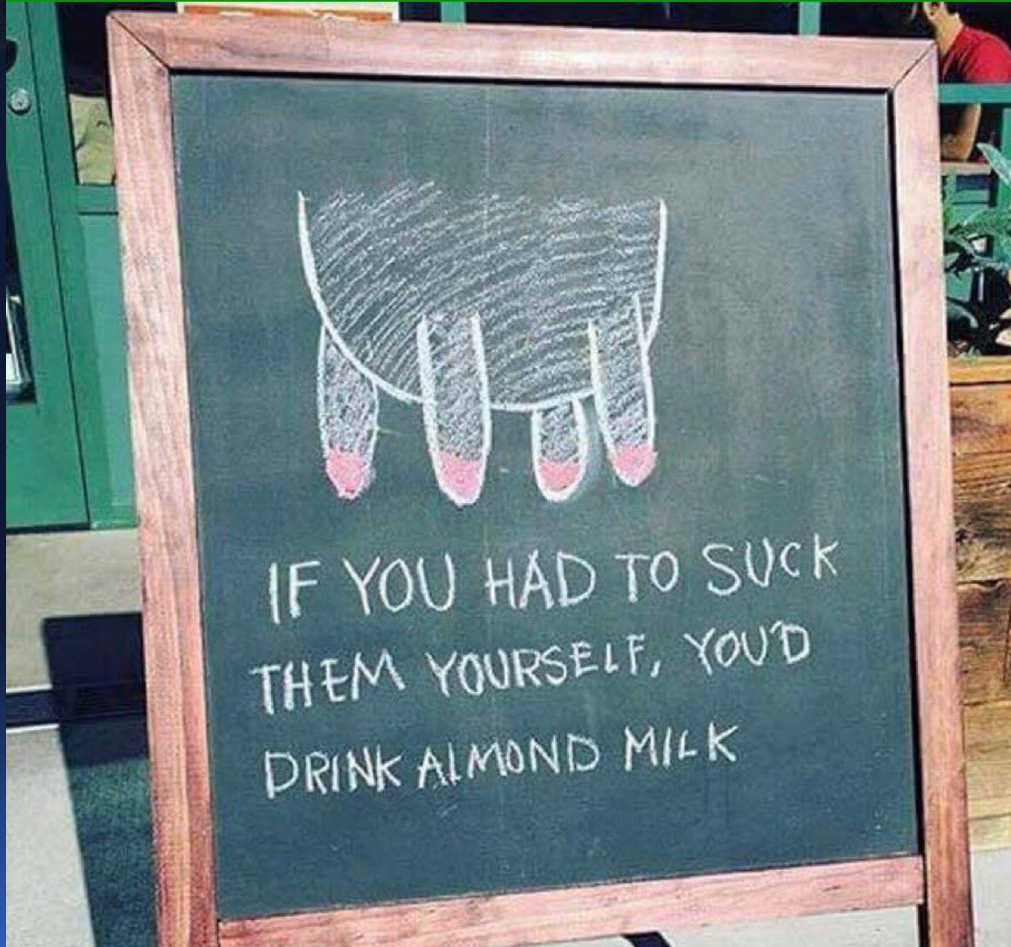
Source: Created by Dr. Jude L. Capper, 2020.

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D

Are provocative messages influencing consumers?



Alternative beverages are gaining market share – but does this represent a shift to vegetarian and vegan diets?

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Source: Created by Dr. Jude L. Capper, 2020. Photo from: <https://pbs.twimg.com/media/C1LXdDoUUA2KH.jpg>

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Is the rise in plant-based food sales related to consumer demand?



Lockdown preparations in local food hall indicate that dairy may be a priority for many panic-buyers

Source: Created and photo by Dr. Jude L. Capper, 2020

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Do 402,206 Veganuary participants amount to more than a hill of beans?

**JOIN THE
NEW YEAR'S
REVOLUTION**



- Slightly greater than the population of Coventry
- If all participants were UK-based they would comprise <1% of the UK population
- Average of 2,095 per participating country
- 62% of participants already vegan, vegetarian or pescatarian

Source: Created by Dr. Jude L. Capper, 2020. Information from: <https://veganuary.com/veganuary-2020-official-survey-results/>

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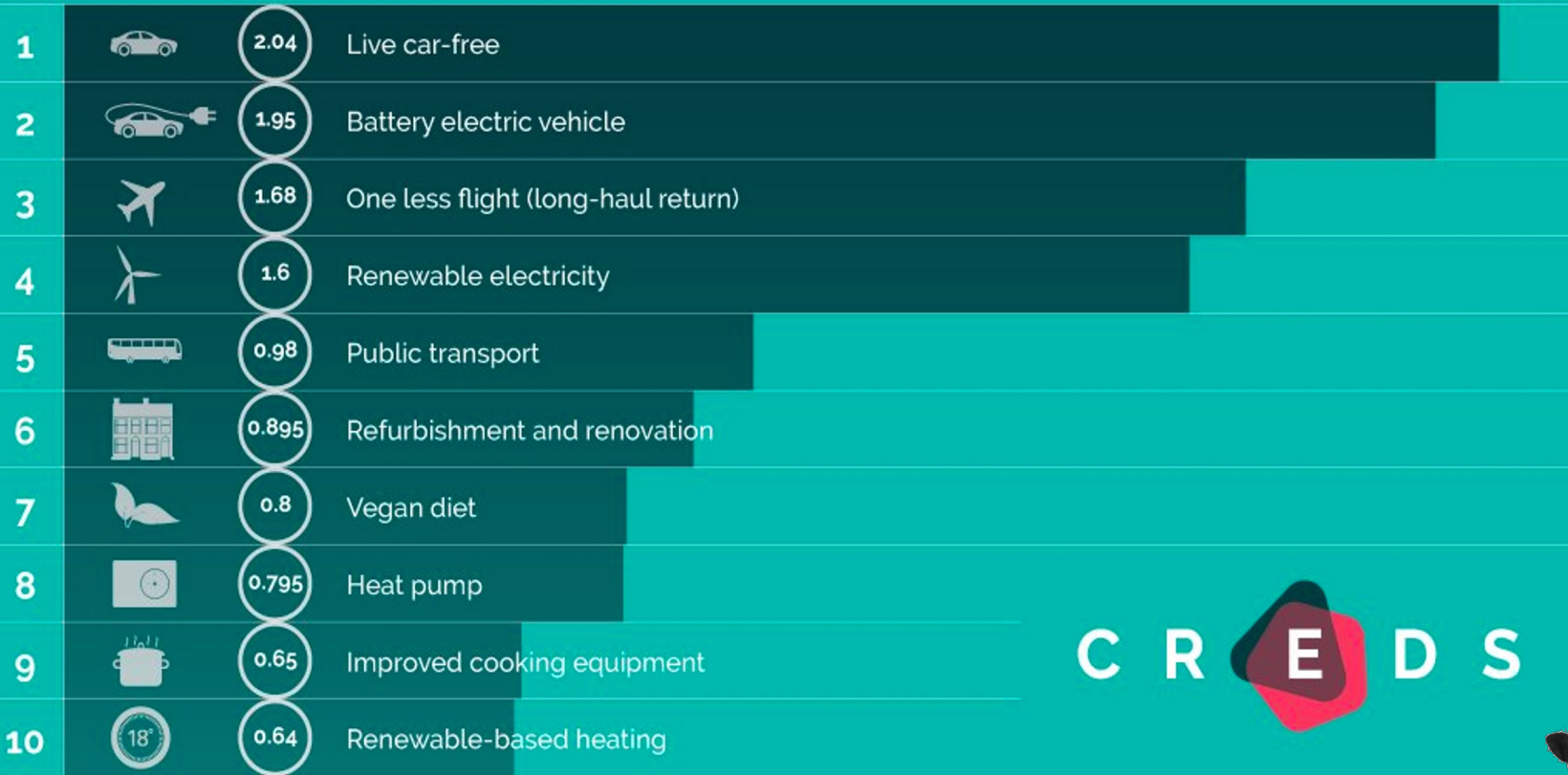
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CV

New CREDS report puts transport, energy and food choices into context

Top 10 options for reducing your carbon footprint



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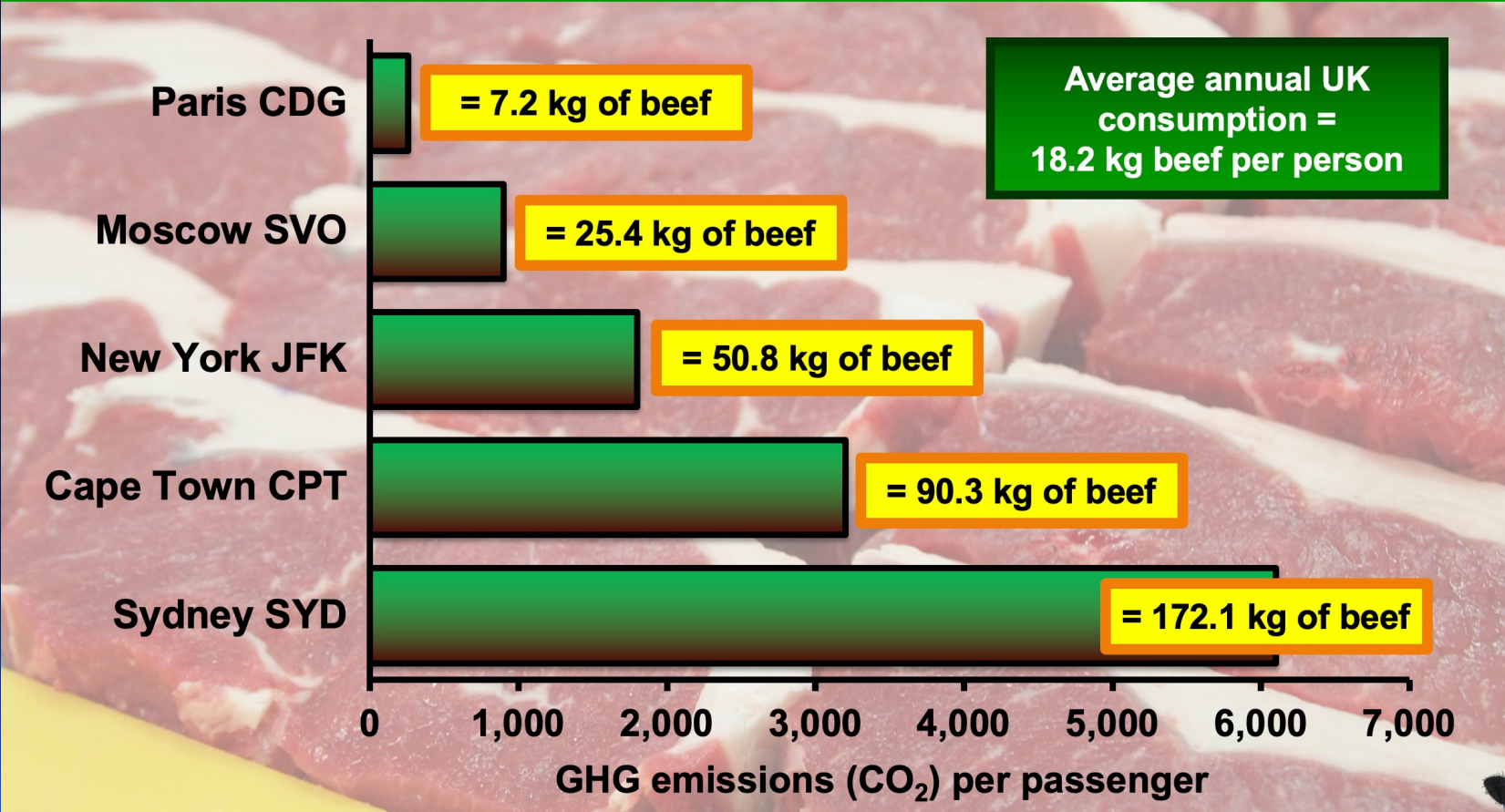
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Source: Created by Dr. Jude L. Capper, 2020. . Infographic adapted from Centre for Research into Energy Demand Solutions (2020). Available at: https://twitter.com/CREDS_UK/status/1262984570175176704?s=20



CV

International flights emit considerable quantities of carbon compared to beef production



Source: Created by Dr. Jude L. Capper, 2020. Calculations based on GHG emissions flight data from: https://co2.myclimate.org/en/flight_calculators/new, and on a carbon footprint per kg of boneless beef of 35.5 kg CO₂-eq (under GWP100) from AHDB: http://beefandlamb.ahdb.org.uk/wp-content/uploads/2013/05/p_cp_down_to_earth300112.pdf

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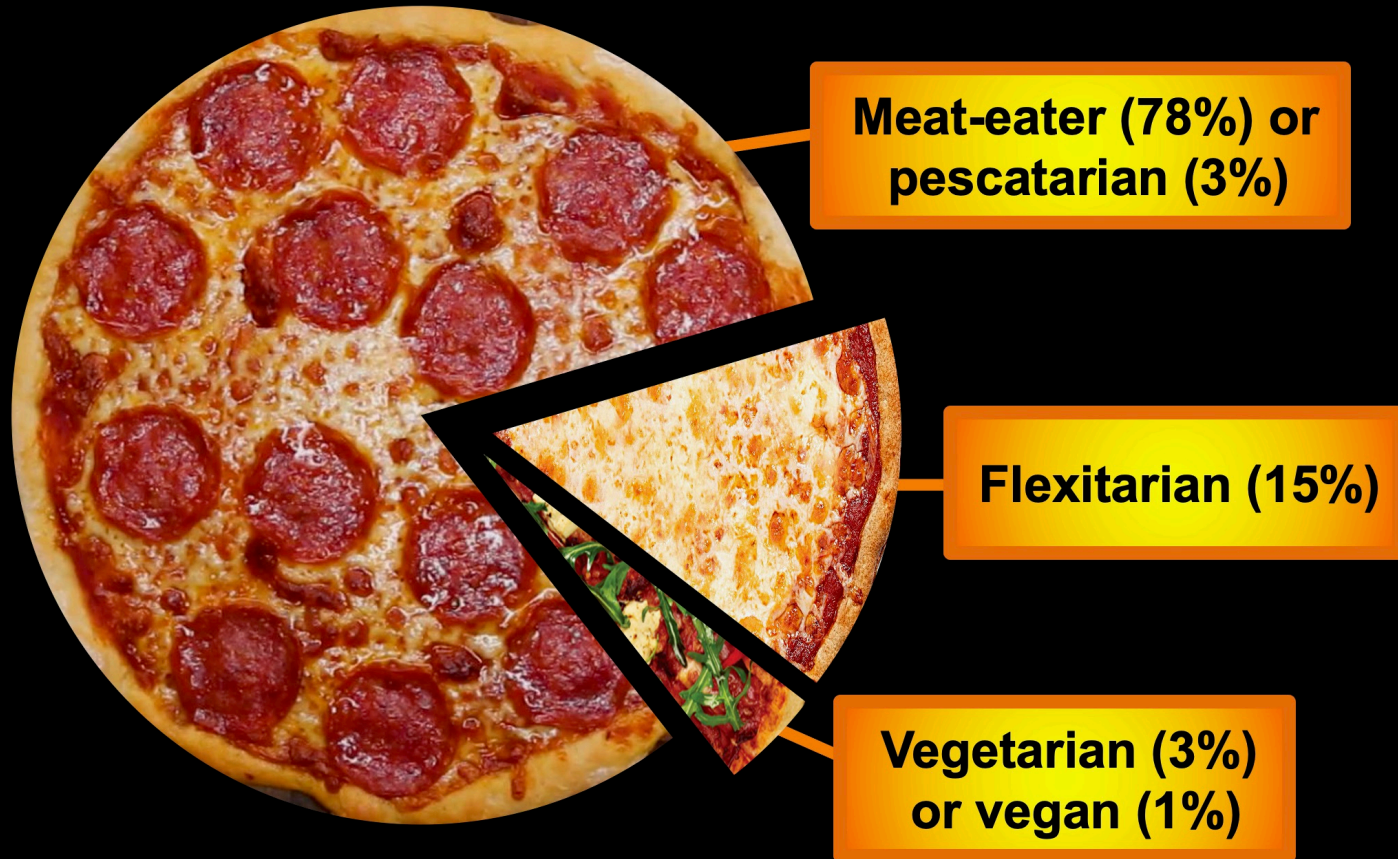


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The future probably isn't vegan, but it may be flexitarian?



Source: Created by Dr. Jude L. Capper, 2020. Data from: YouGov (2019) Is the future of food flexitarian?
<https://yougov.co.uk/topics/resources/articles-reports/2019/03/18/future-food-flexitarian> Question: "Which, if any, of these best describes your usual eating habits?" Results adjusted for people who answered "don't know" (3%) or "other" (3%).

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Animal welfare and human health are major concerns for people giving up animal products

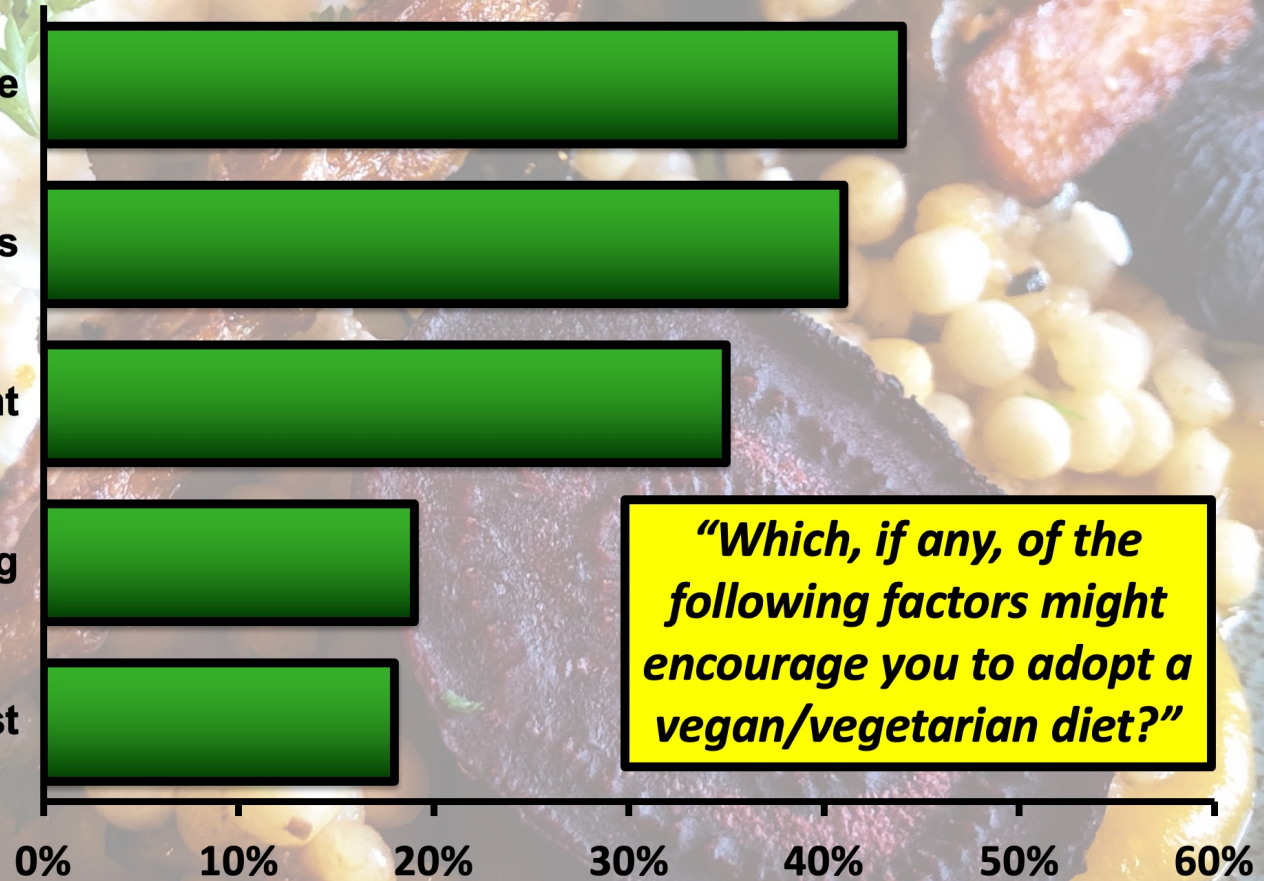
Animal welfare

Healthiness

Environment

Labelling

Economic cost



“Which, if any, of the following factors might encourage you to adopt a vegan/vegetarian diet?”

Source: Created by Dr. Jude L. Capper, 2020. Information from: YouGov (2019) Is the future of food flexitarian?
<https://yougov.co.uk/topics/resources/articles-reports/2019/03/18/future-food-flexitarian>

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Guilt is a primary motivator for people considering going vegetarian or vegan

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"I sometimes feel guilty when consuming meat and dairy products"

66% of meat-eaters and flexitarians thinking of giving up meat said "yes" compared to 25% of national population

No guilt
34%



Feel guilty
66%

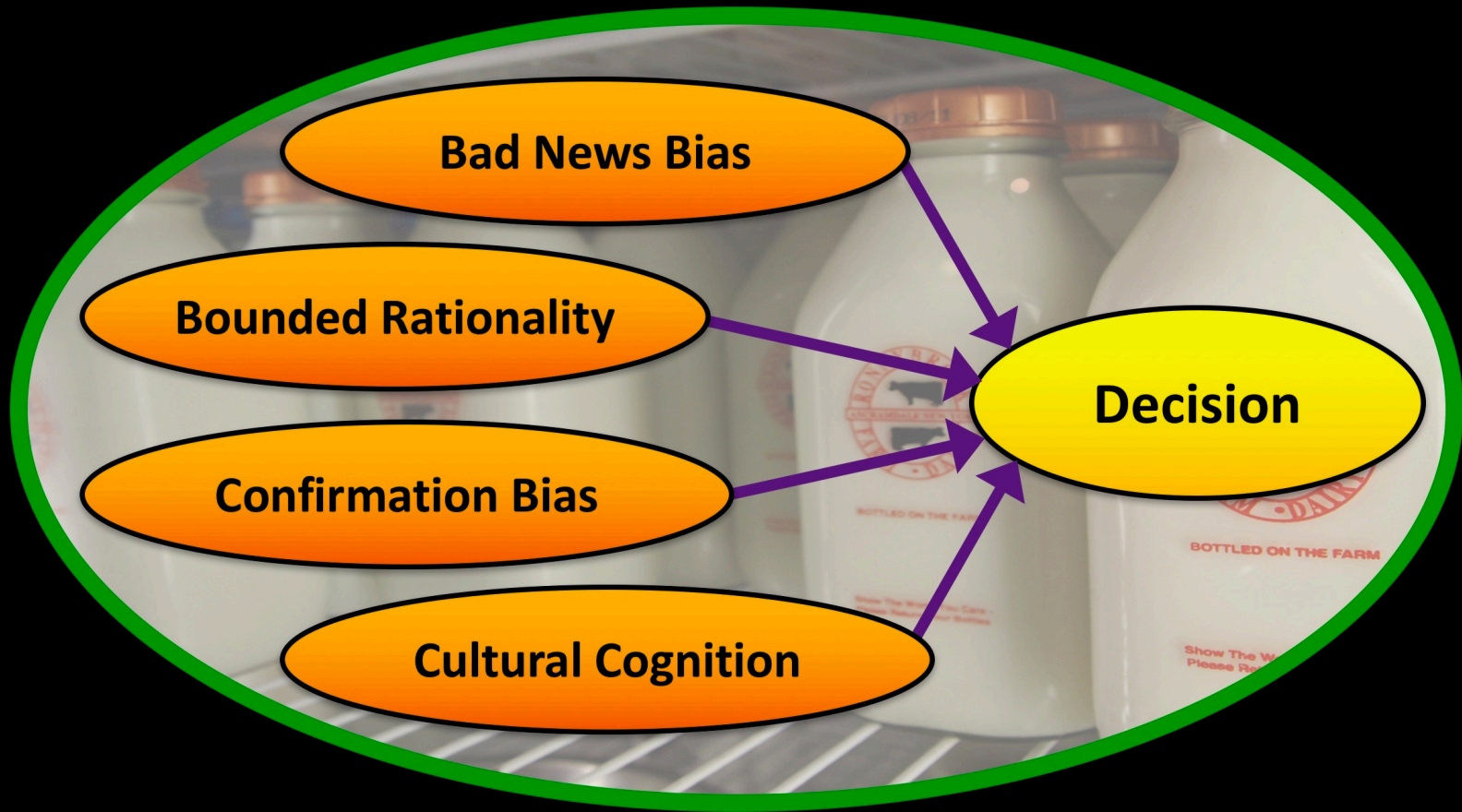
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Source: Created by Dr. Jude L. Capper, 2020. Information from: YouGov (2019) Is the future of food flexitarian?
<https://yougov.co.uk/topics/resources/articles-reports/2019/03/18/future-food-flexitarian>



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Four major processes influence consumer decision-making



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Source: Created by Dr. Jude L. Capper, 2017. Information from: Capper and Yancey (2015). Communicating Animal Science to the General Public. *Animal Frontiers*.

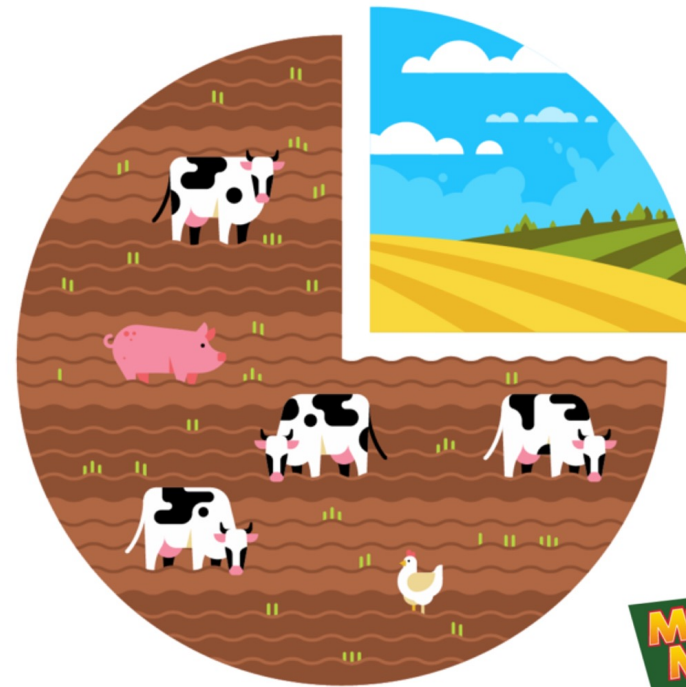


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Bad news bias – need five positive stories to cancel out each negative

We are programmed to believe bad news stories. Tidal wave of factual information needed to overcome them.

LIVESTOCK PRODUCTION USES 75% OF THE EARTH'S AGRICULTURAL LAND.



MEATLESS MONDAY

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Source: Created by Dr. Jude L. Capper, 2020. Infographic from: <https://www.pinterest.co.uk/pin/254383078939543245/>



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65% of UK land is not suitable for growing arable crops



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Source: Created by Dr. Jude L. Capper, 2020. Grazing land includes temporary grass on arable land (6% of total), land used for outdoor pigs or non-agricultural purposes not shown (1.7% of total). Data from DEFRA. 2019. Farming statistics - provisional crop areas, yields and livestock populations at 1 June 2019 – United Kingdom.

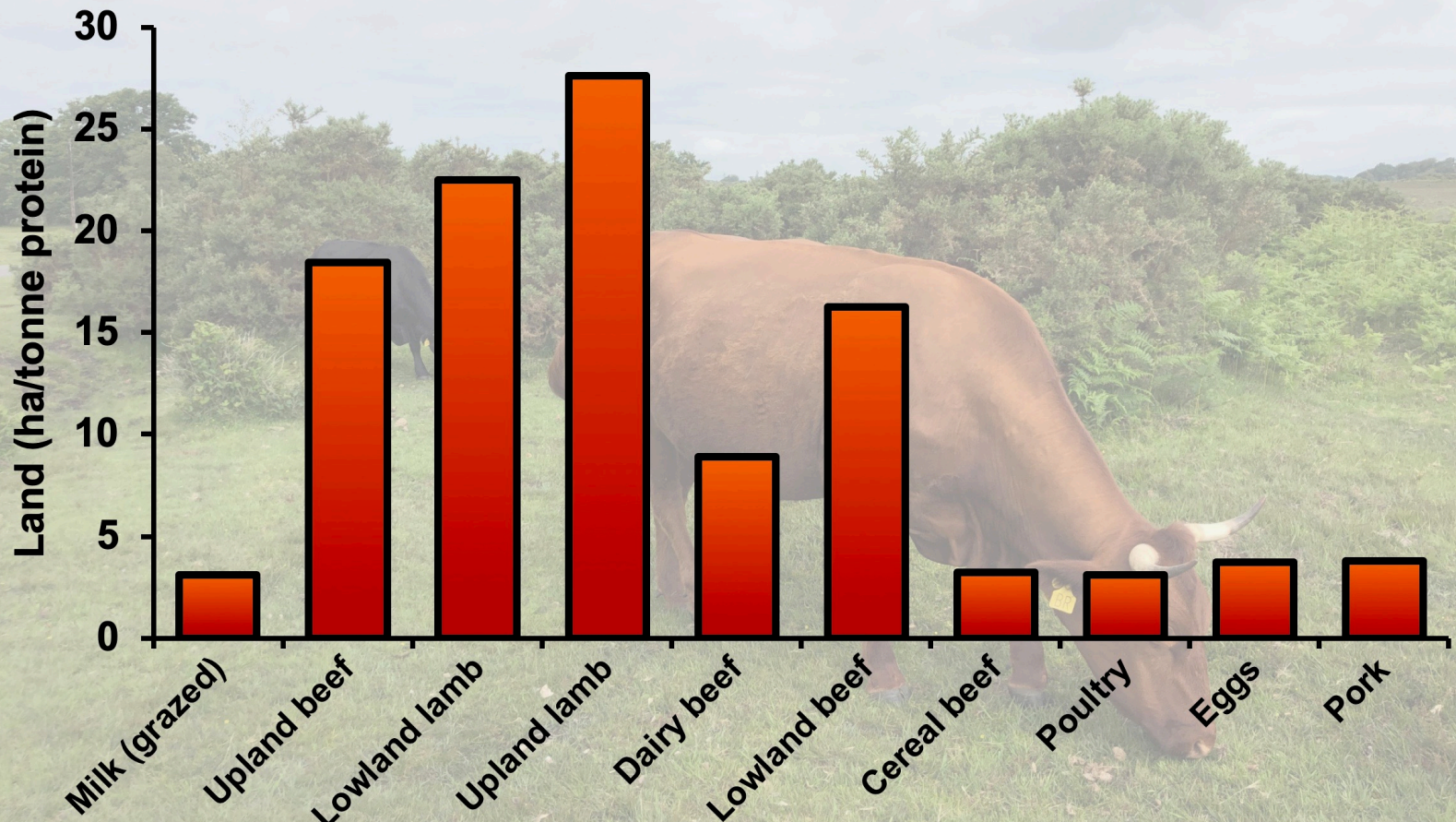
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/837834/structure-jun2019prov-UK-10oct19.pdf

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Livestock systems vary widely in land use



Source: Created by Dr. Jude L. Capper, 2020; data from Wilkinson and Lee (2018) Review: Use of human-edible animal feeds by ruminant livestock. *Animal*.

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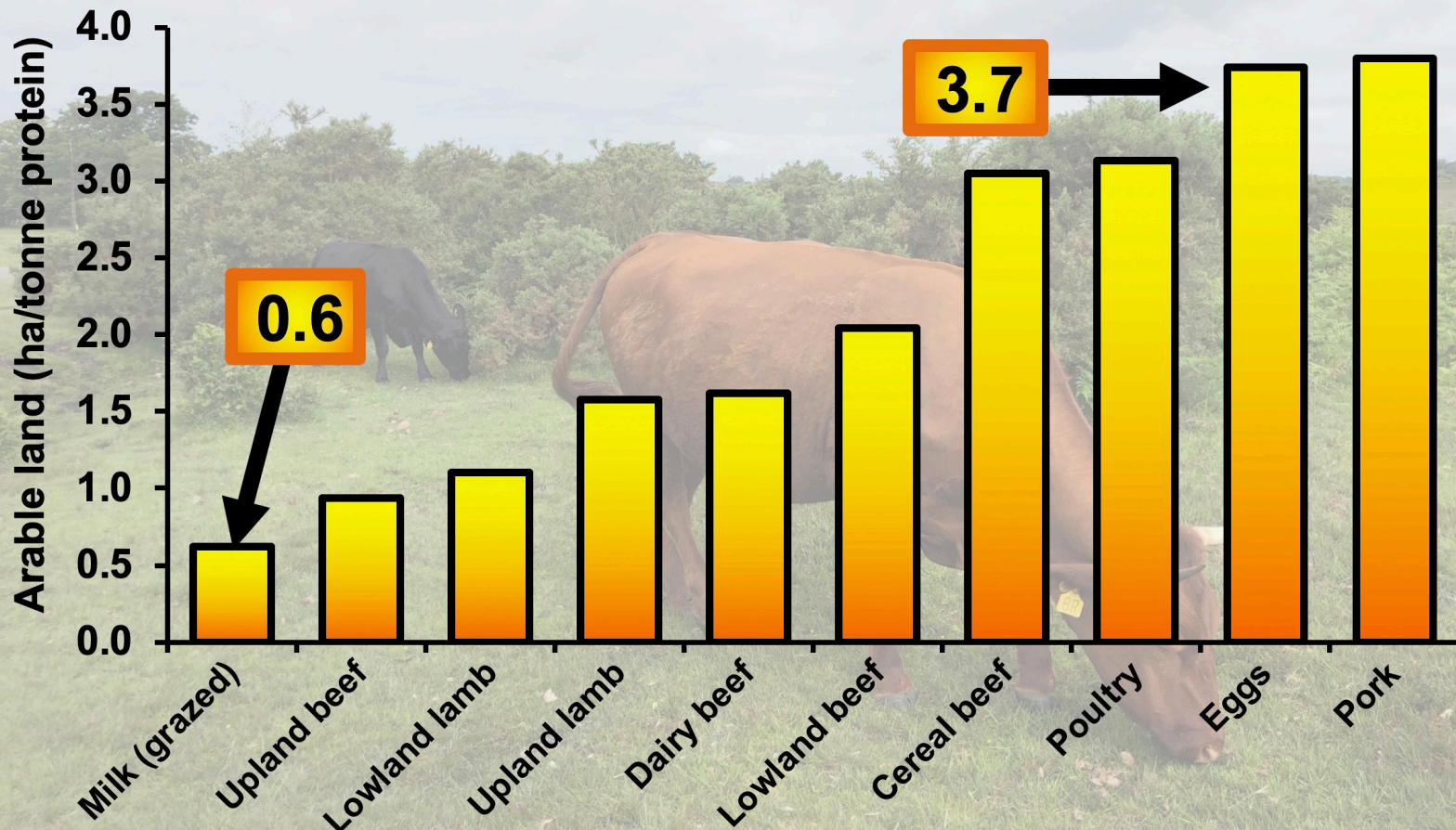


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5

Livestock systems vary widely in arable land use



Source: Created by Dr. Jude L. Capper, 2020; data from Wilkinson and Lee (2018) Review: Use of human-edible animal feeds by ruminant livestock. Animal.

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What do these industries have in common? They all provide by-products fed to animals



Source: Created by Dr. Jude L. Capper, 2013

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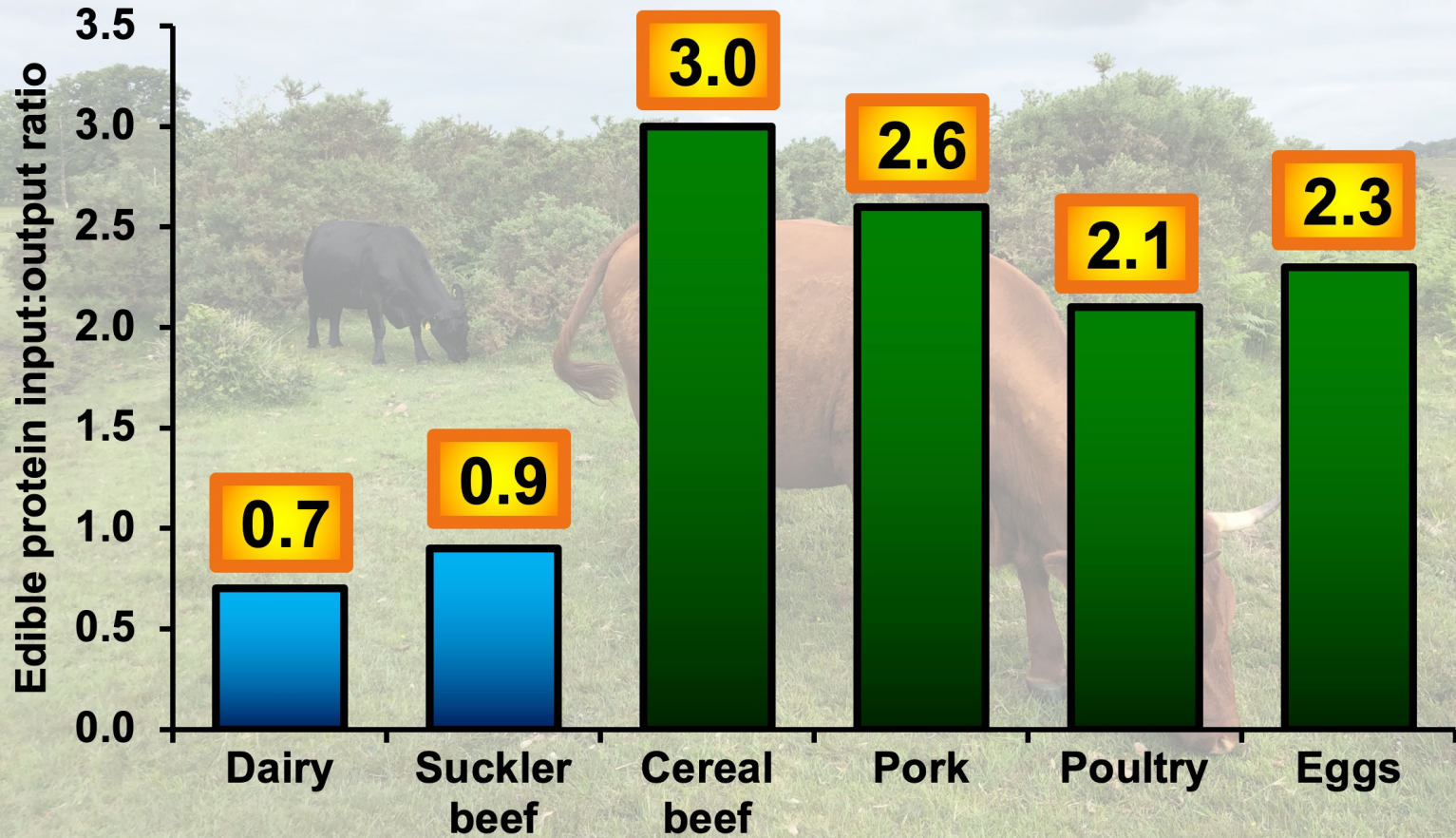


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Grazing cattle systems produce more human-edible protein than they consume



Source: Created by Dr. Jude L. Capper, 2020; data from Wilkinson (2011) Re-defining efficiency of feed use by livestock. *Animal*.

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Bounded rationality - we don't have time to research, so need quick, simple explanations

Based on the average UK diet

30%

of our protein intake comes from red meat...

...which is vital for our body's growth, maintenance and muscle recovery!



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Source: Created by Dr. Jude L. Capper, 2020. Infographic from HCC (2020): <https://meatpromotion.wales/en/news-industry-info/download>



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Confirmation bias – tapping into consumers' inherent beliefs to improve trust

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Consumers may interpret bottle-feeding a calf as caring or cruel, depending on pre-conceived ideas

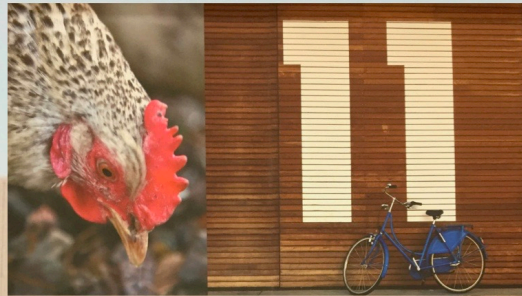
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Source: Created by Dr. Jude L. Capper, 2020.



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We need transparency not bucolic imagery



TRACED FROM FARM TO KITCHEN

Source: Created by and photo by Dr. Jude L. Capper, 2017.

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Cultural cognition – we trust people with whom we share values and wish to emulate

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England rugby player credited <3 week recovery from broken leg to drinking 2 pints of milk per day

Source: Created by Dr. Jude L. Capper, 2019. Screenshot from: <http://www.telegraph.co.uk/rugby-union/2017/02/02/england-prop-joe-marler-reveals-secret-behind-hisremarkable/>

The Telegraph

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England prop Joe Marler reveals the secret behind his remarkable recovery in time for Six Nations



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5 easy tips for positive communication

Share your values

Stay positive, polite and personal

Keep it short, simple and see-through

Focus on the important

Know when to walk away

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Source: Created by Dr. Jude L. Capper, 2019. Adapted from: Capper and Yancey. 2015. Communicating Animal Science to the General Public. *Animal Frontiers*.



B

Thank you!

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<http://bovidiva.com/presentationlinks>

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Questions?



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Source: Created by Dr. Jude L. Capper, 2020. Cartoon from: <http://RubesCartoons.com>