



**The Gift of
Livestock –
Food, Income,
Education,
Cultural
Status,
Environmental
Care and HOPE**

13th December 2022

Source: Jude L. Capper, 2022

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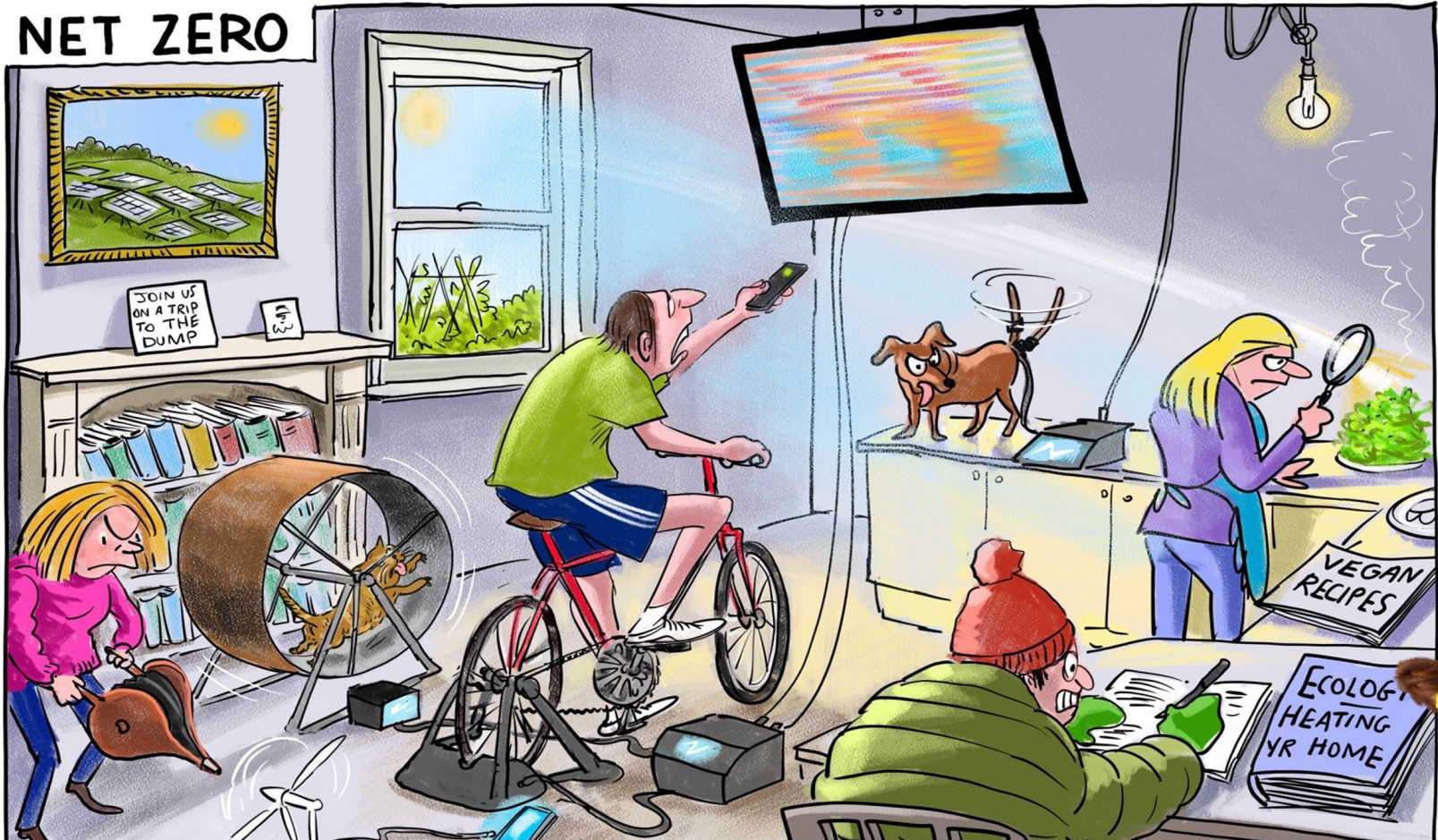
There is no definitive sustainable protein system – but every system can be sustainable



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

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Net Zero is a clear priority



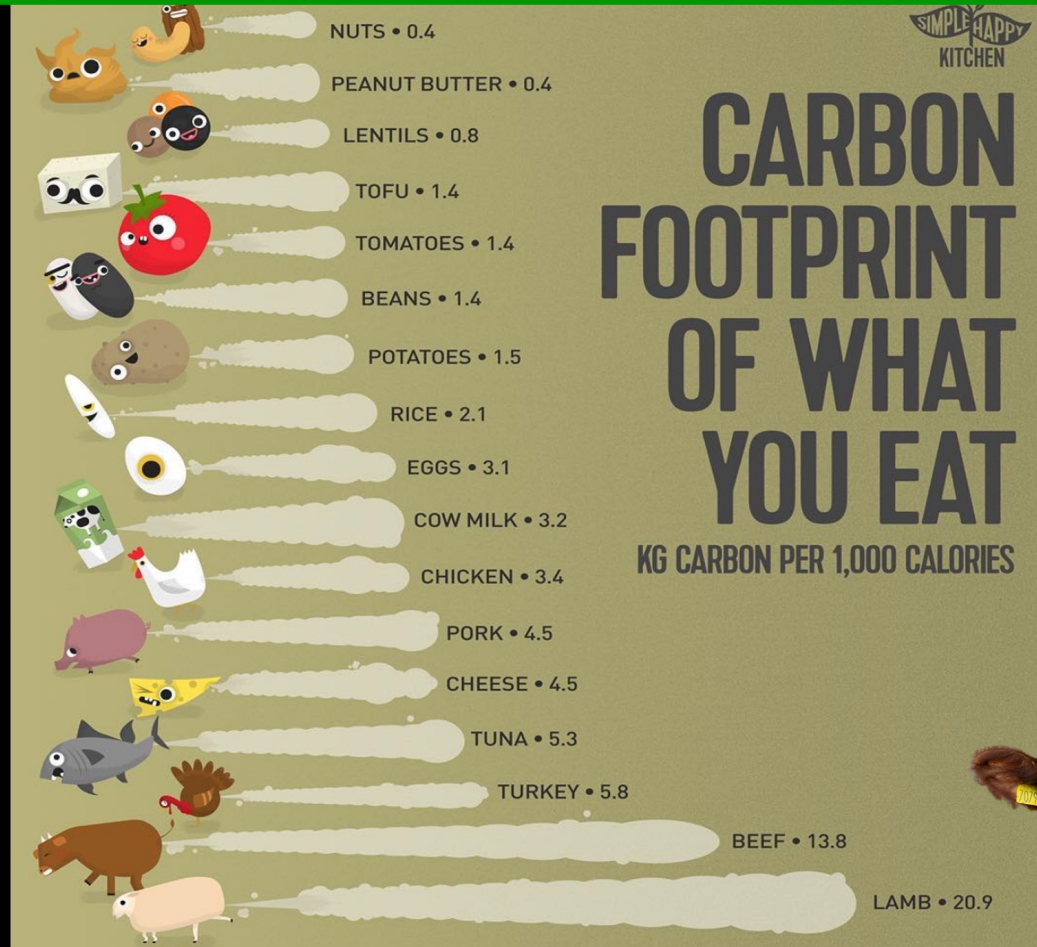
Source: Created by Dr. Jude L. Capper, 2021. Cartoon from: <https://twitter.com/Caroon4sale/status/1384537729460056067?s=20>



B

Global averages are meaningless

The carbon footprints of the foods we eat vary considerably – global average figures are inappropriate when food production is regional



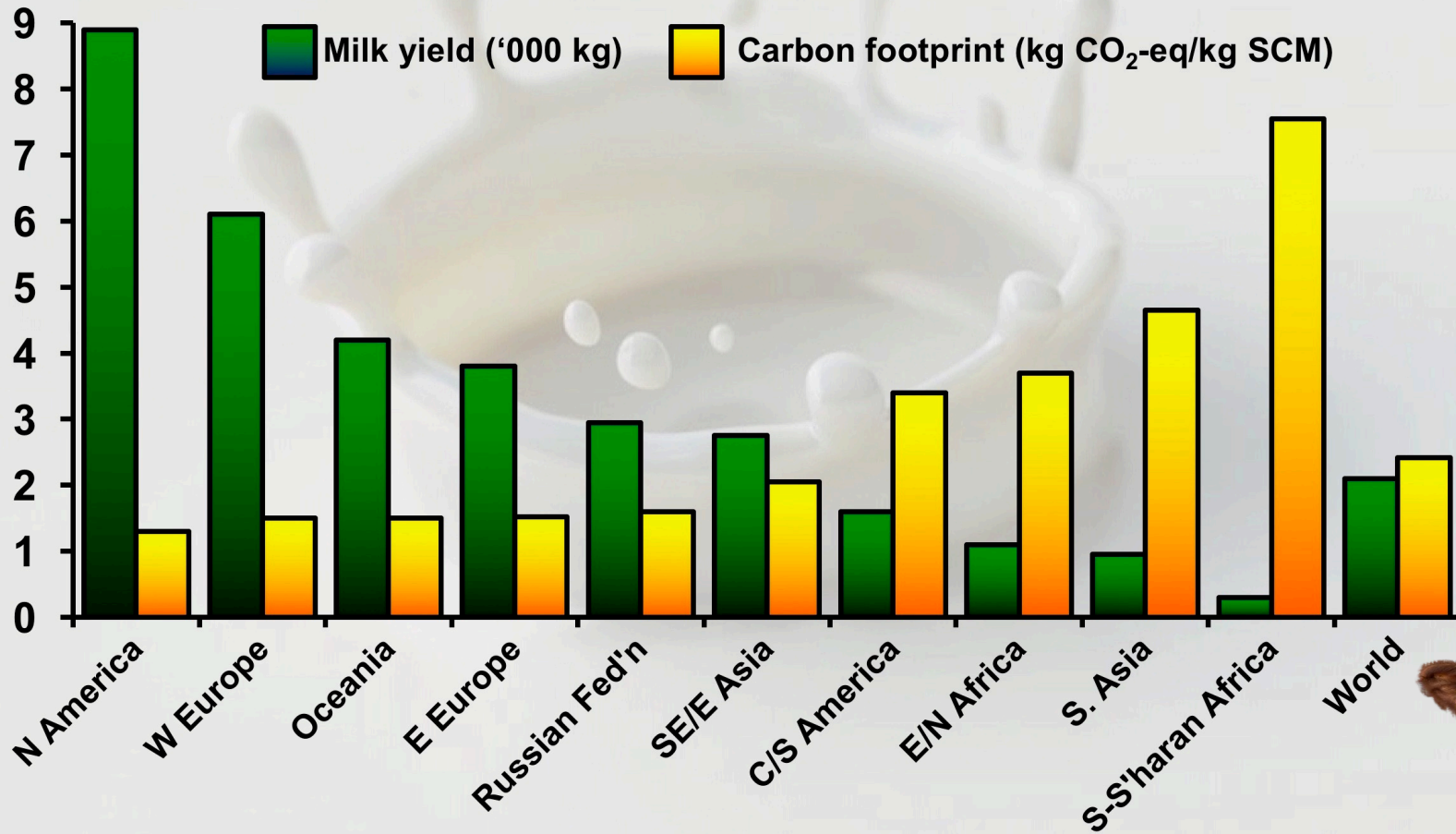
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Source: Created by Dr. Jude L. Capper, 2020, infographic from: https://www.instagram.com/simple_happy_kitchen/

DS

A negative correlation exists between milk yield and carbon emissions

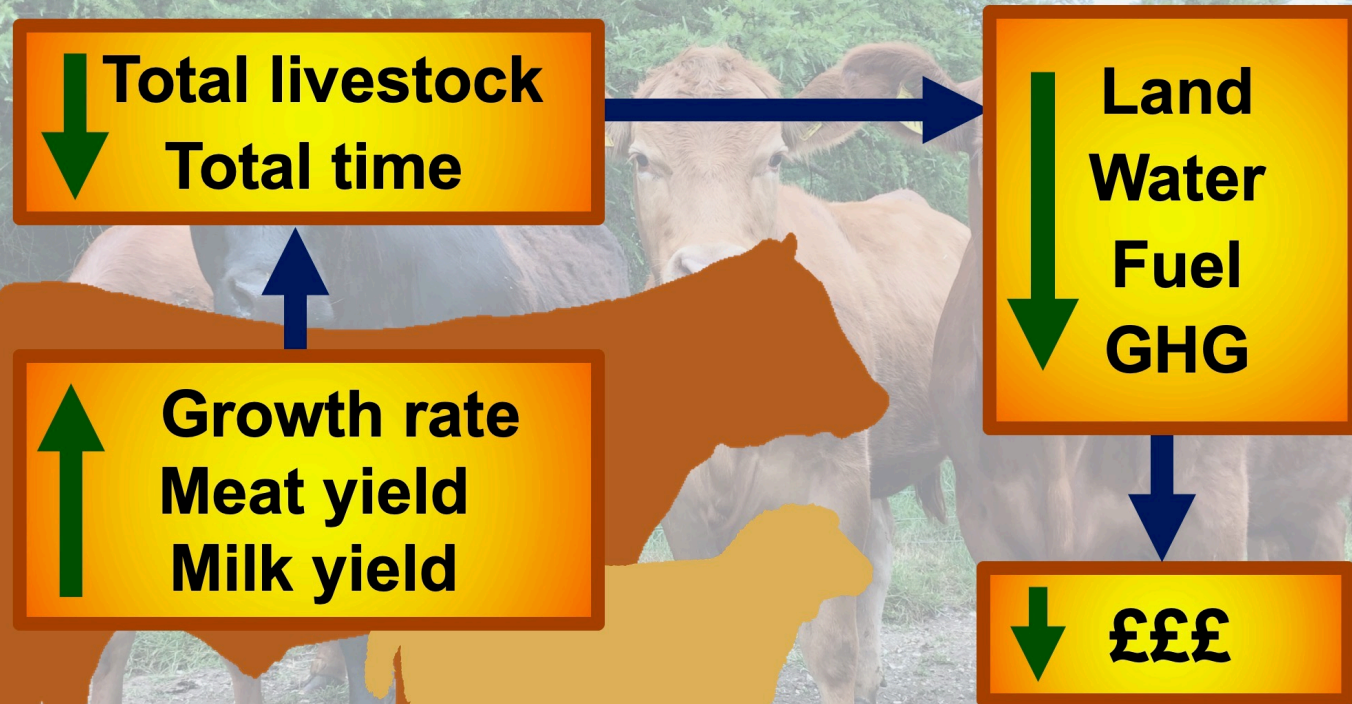


Source: Created by Dr. Jude L. Capper, 2016; data from: FAO (2010) Greenhouse Gas Emissions from the Dairy Sector. FAO, Rome, Italy.



B

Improving animal productivity reduces the environmental impact of milk and meat

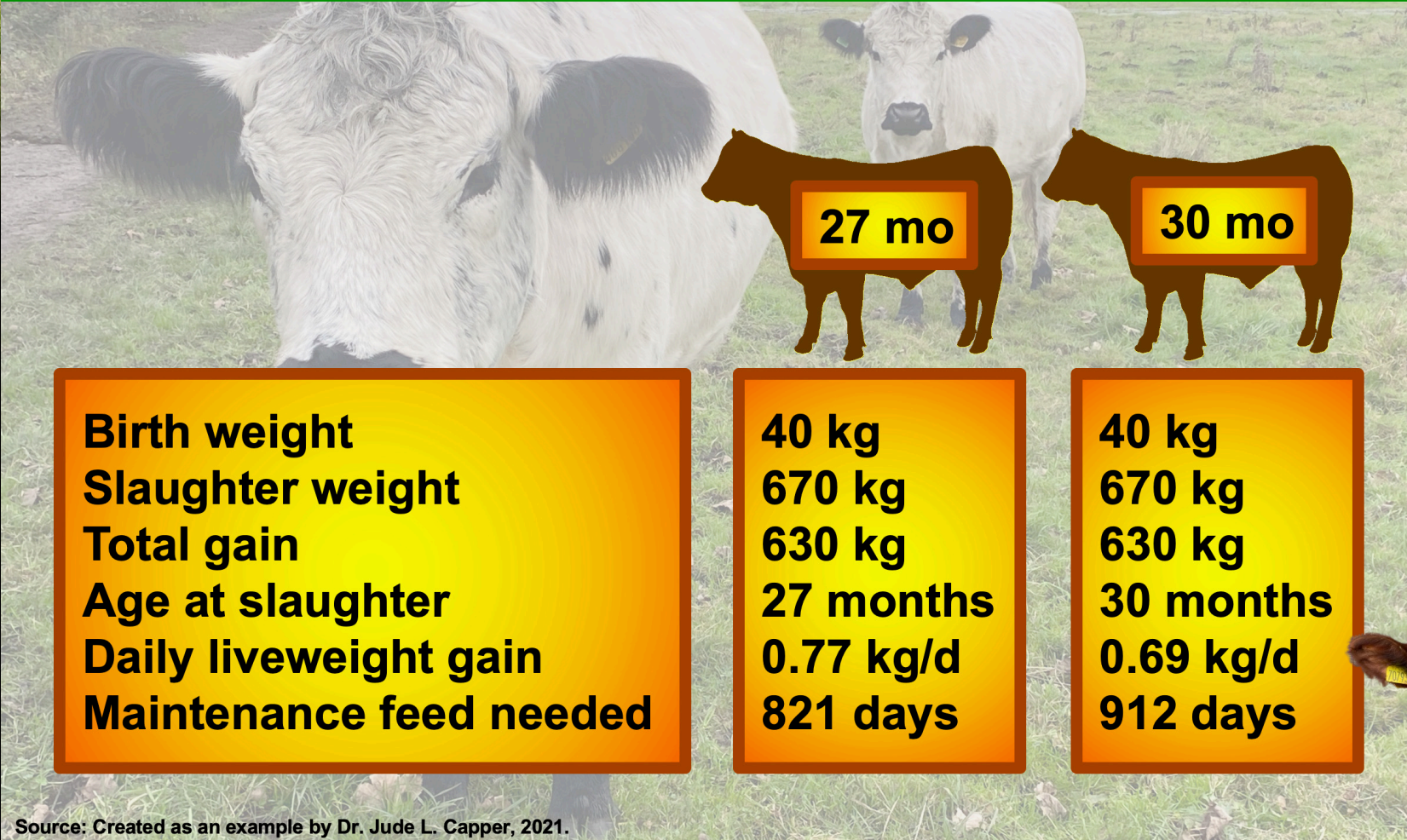


Source: Created by Dr. Jude L. Capper, 2020. Data from: Capper, J.L. 2015. Sustainability and One Health. In: Cockcroft, P. *Bovine Medicine*. Wiley-Blackwell, Oxford, UK.



B

Reducing age at slaughter has both economic and environmental benefits

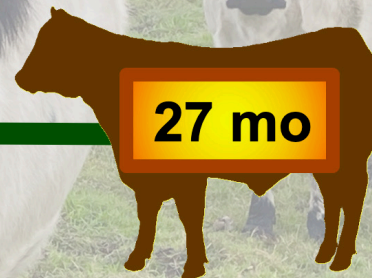


Source: Created as an example by Dr. Jude L. Capper, 2021.

B

Reducing age at slaughter has both economic and environmental benefits

↓
91 fewer days of feed, land and greenhouse gases. Opportunity cost?



Birth weight
Slaughter weight
Total gain
Age at slaughter
Daily liveweight gain
Maintenance feed needed

40 kg
670 kg
630 kg
27 months
0.77 kg/d
821 days

40 kg
670 kg
630 kg
30 months
0.69 kg/d
912 days

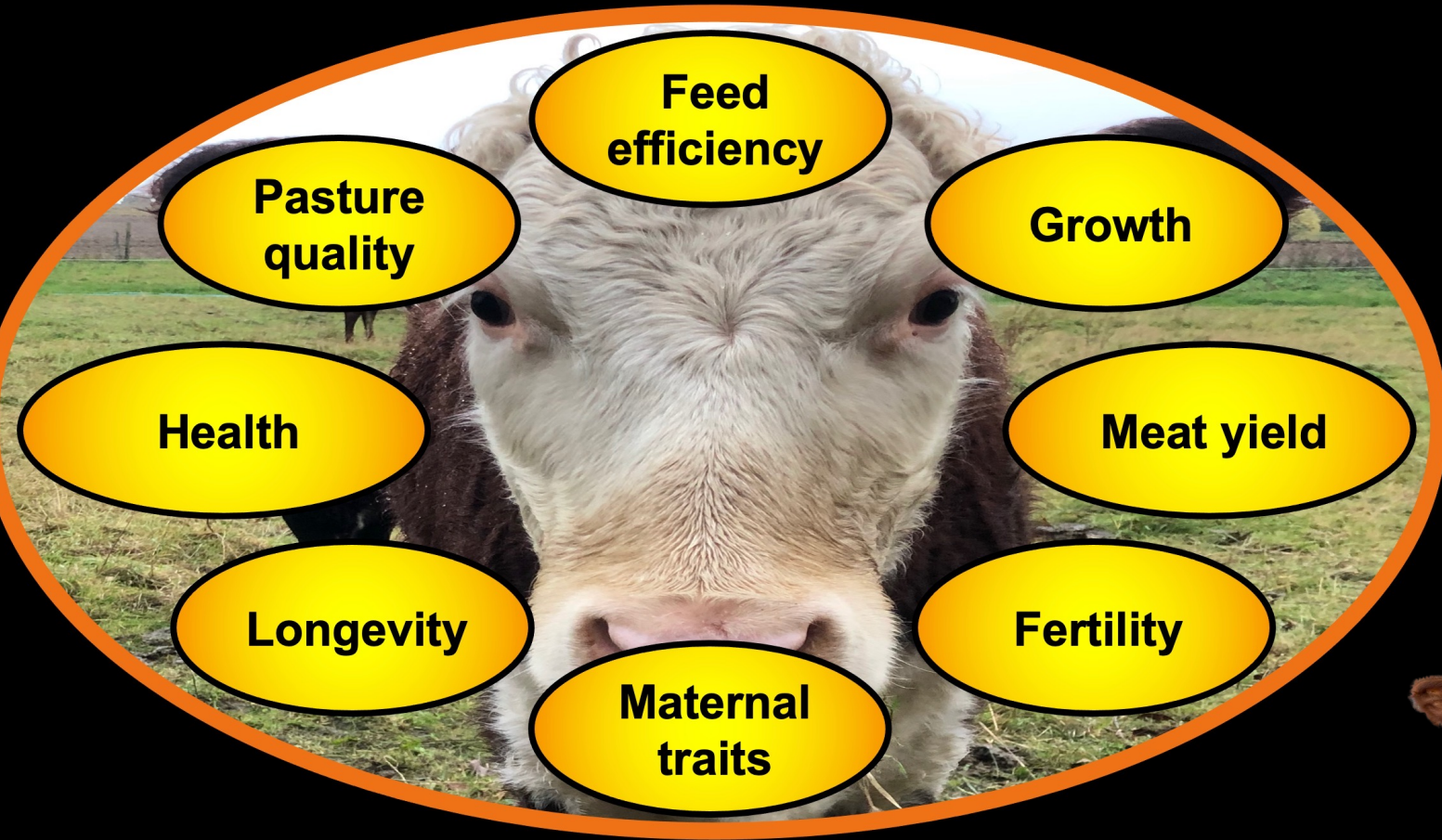


Source: Created as an example by Dr. Jude L. Capper, 2021.



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Doing everything better on-farm improves economic and environmental sustainability

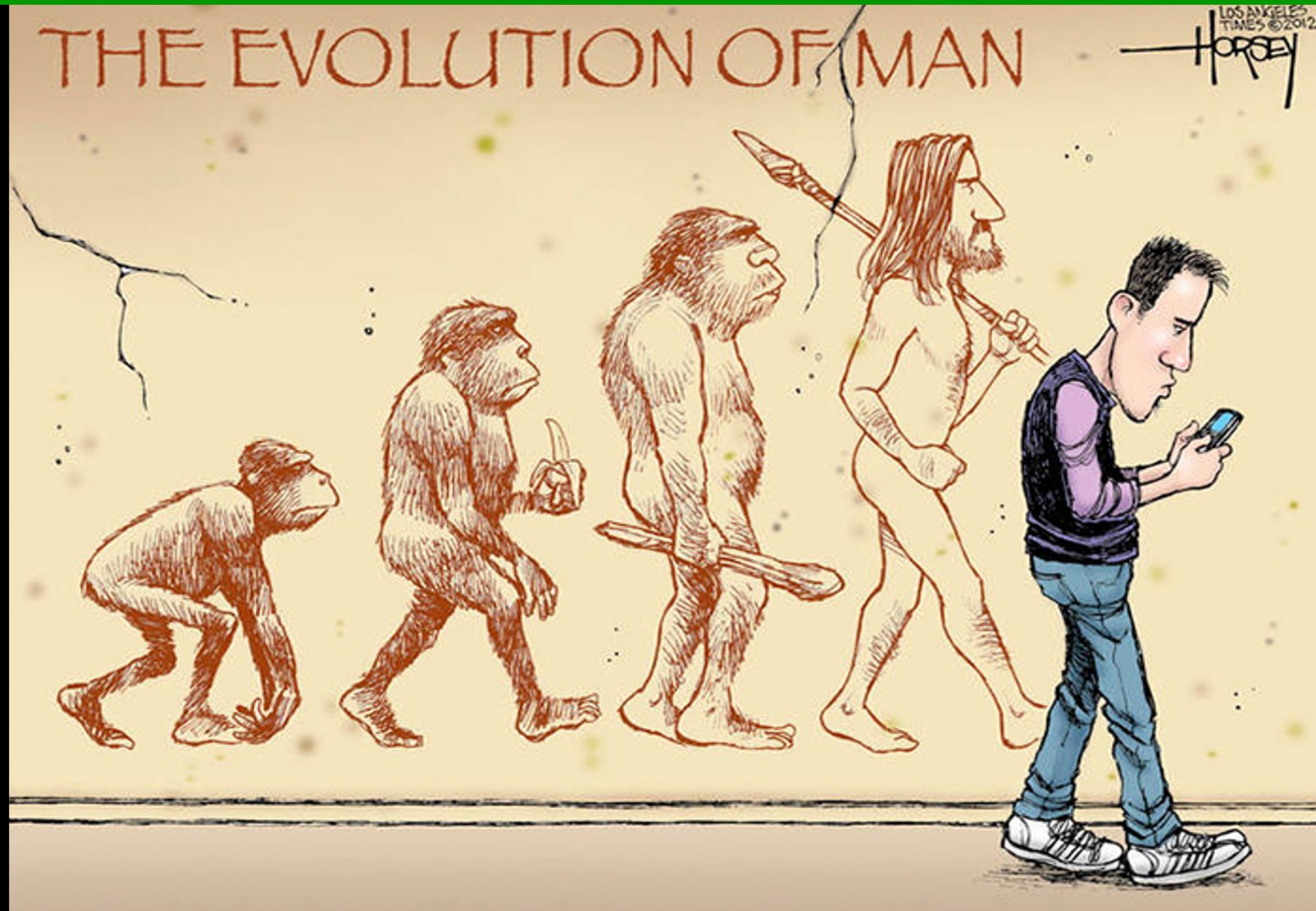


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COM

We've got the technology –
now we need to use it to its potential



Source: Created by Dr. Jude L. Capper, 2021. Cartoon from: https://static.boredpanda.com/blog/wp-content/uploads/2016/02/funny-satirical-evolution-charles-darwin-day-251_700.jpg

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Retailers face challenge of meeting net zero commitments

50% reduction in food-related GHG emissions by 2030 is possible, but only if we take

URGENT
ACTION

wrap.org.uk/GHGPathway



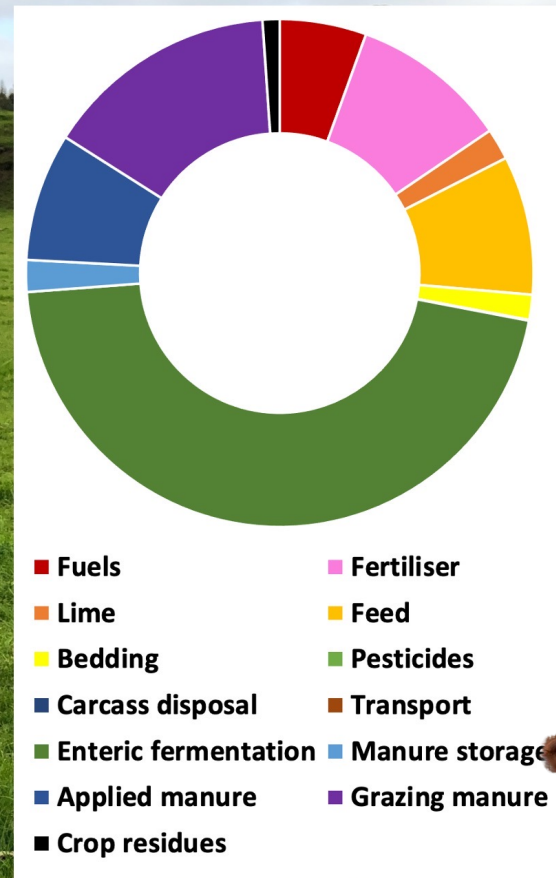
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Source: Created by Dr. Jude L. Capper, 2021. Infographic from: https://wrap.org.uk/sites/default/files/2021-10/WRAP_UK_food%20systems_GHG_Report_TWITTER_Urgent%20action.jpg?itok=8txblEnz

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Standard footprinting tool urgently needed across the industry



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Source: Created by Dr. Jude L. Capper, 2021. Example carbon footprint results based on a beef finishing farm.

B

GHG benefits of dairy-beef now recognized – sucklers will need to demonstrate benefits

Annual requirements of one suckler cow:

- 3,954 kg feed DM
- 20,047 litres water
- 2,459 kg CO₂

Need to justify these impacts vs. beef from dairy.

Source: Created by Dr. Jude L. Capper, 2021. Calculation based on feed and water requirements of one Angus cow weighing 544 kg producing 7.8 kg of milk per day, with calf weaned at 207 days of age.



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Can we grow human food crops everywhere?



Source: Created by Dr. Jude L. Capper, 2021

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Can we grow human food crops everywhere?



Source: Created by Dr. Jude L. Capper, 2021



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Can we grow human food crops everywhere?



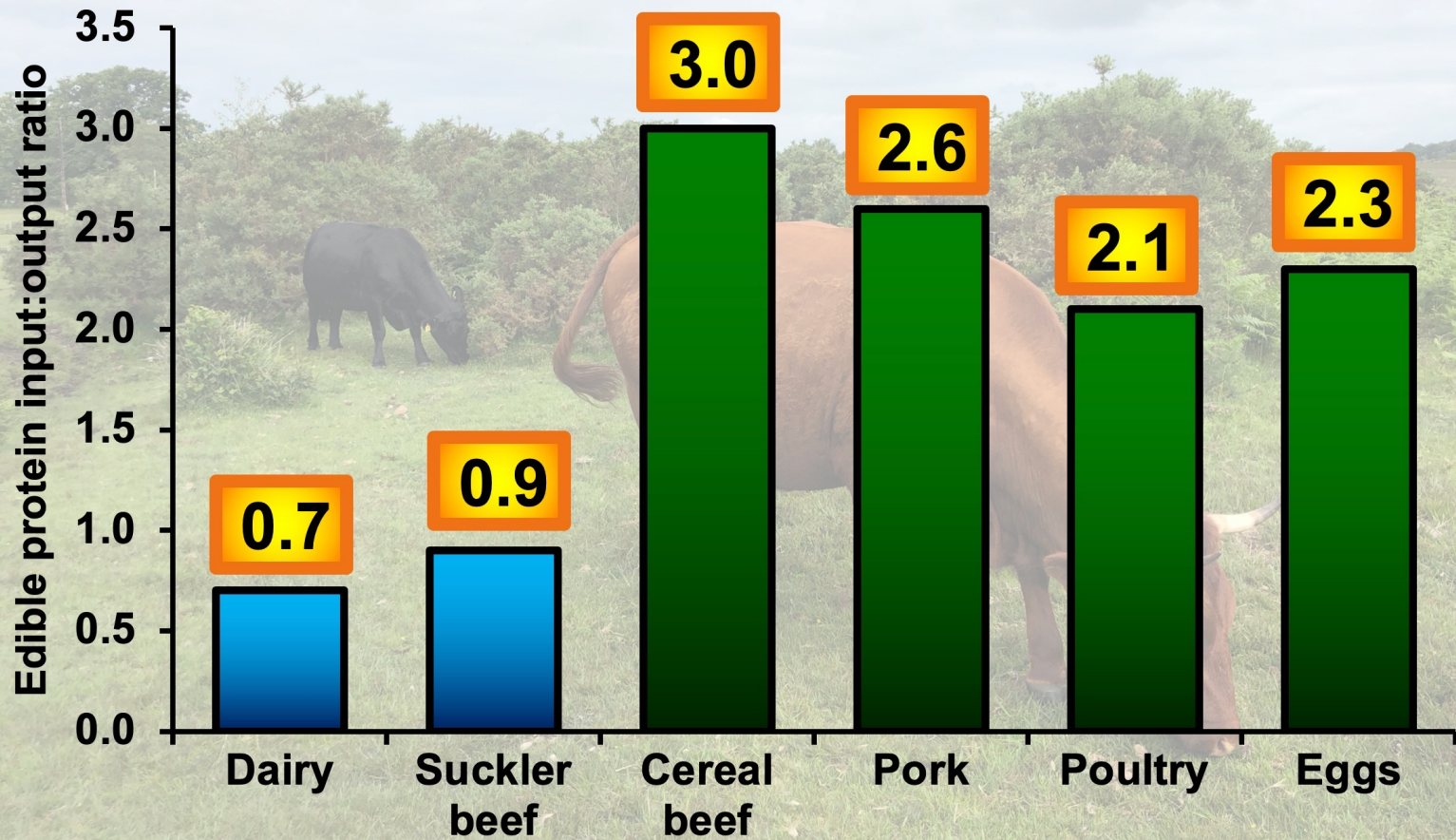
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Source: Created by Dr. Jude L. Capper, 2021

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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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AH

Disease losses are significant and preventable, but the sustainability impacts aren't quantified

Lost: 20%

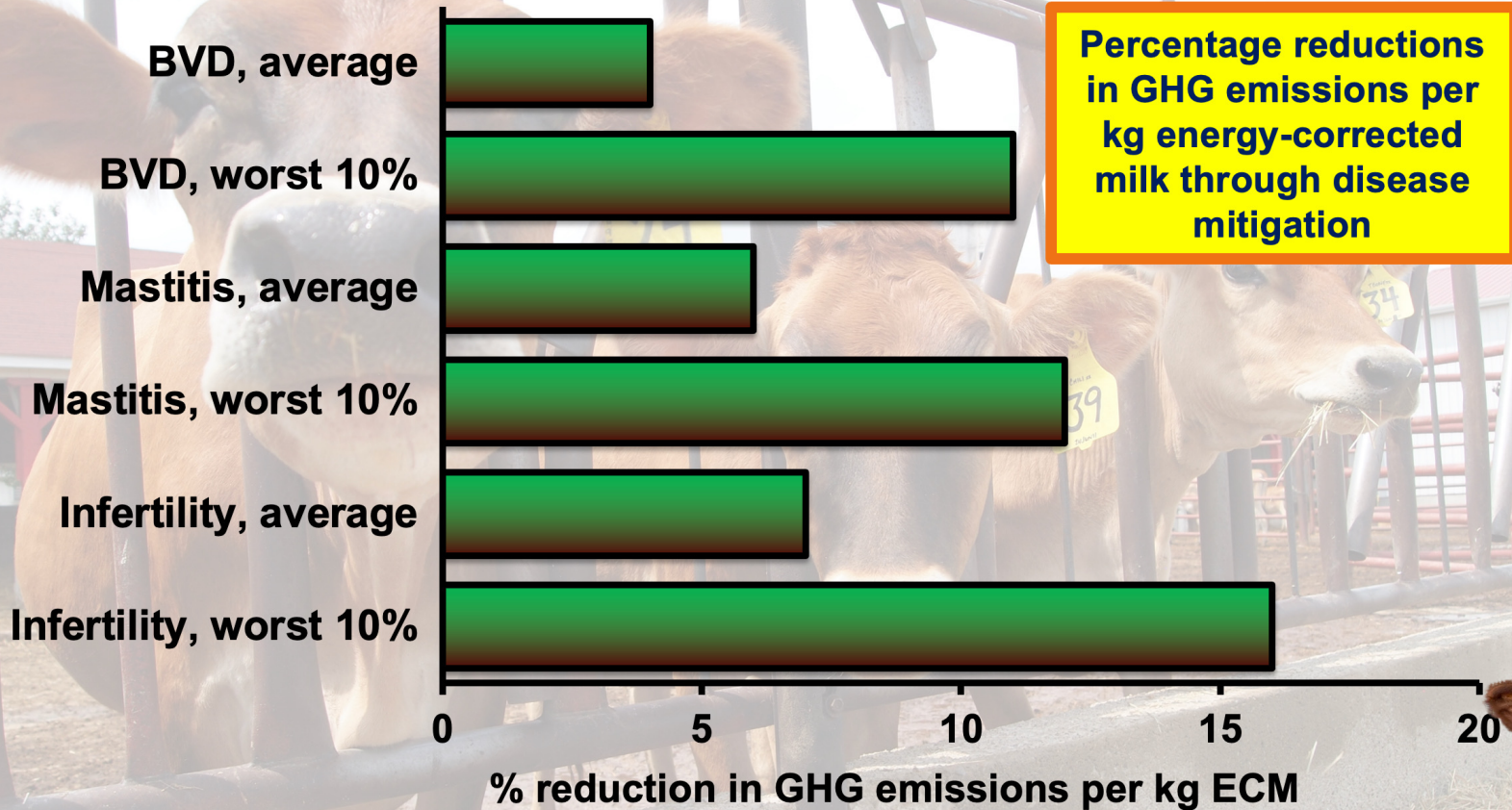
Harvested: 80%

At the worldwide level, average losses due to animal diseases are more than 20% (OIE, 2008)



DS

GHG emissions could be cut significantly by mitigating dairy diseases - UK

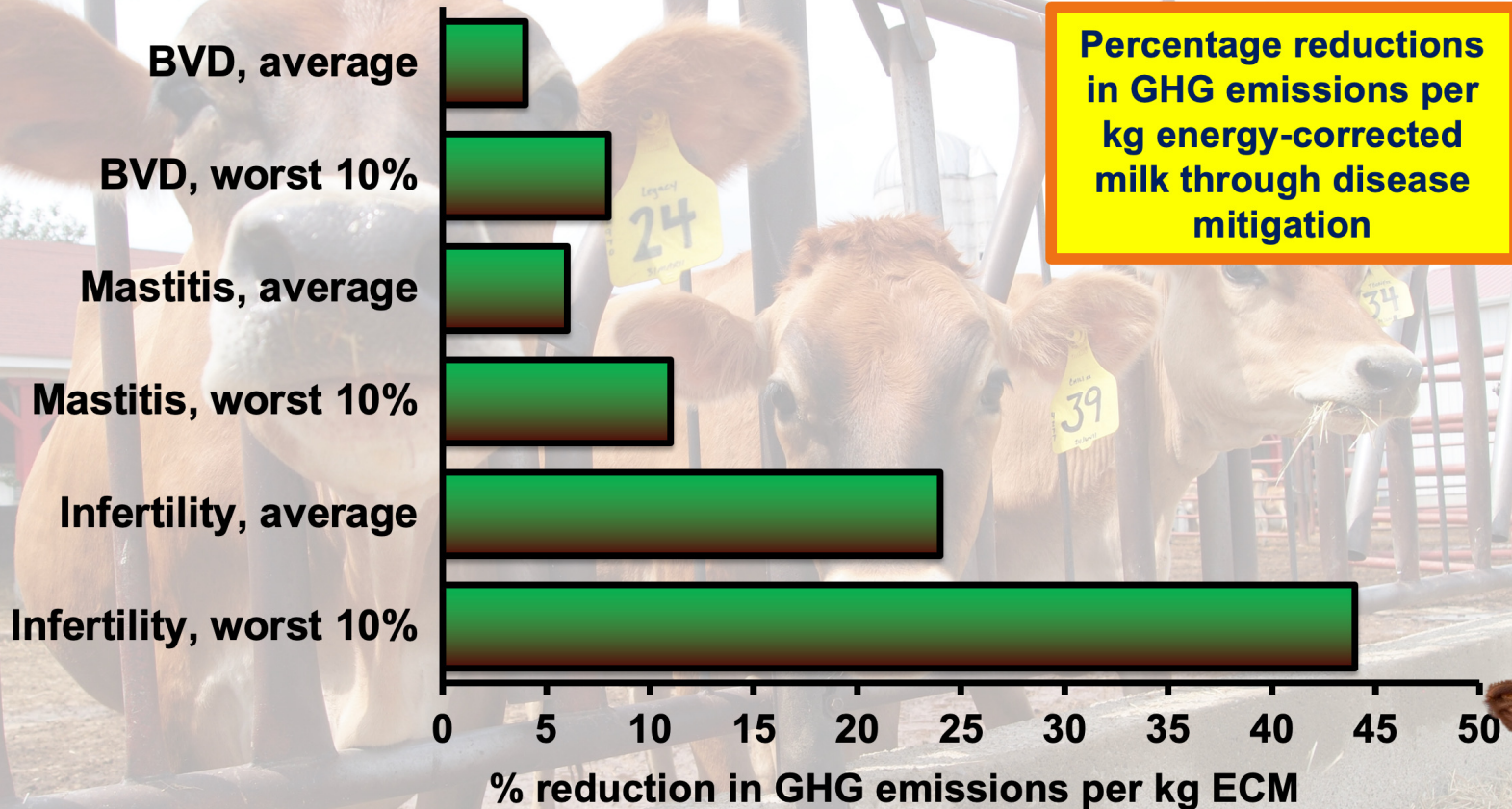


Source: Created by Dr. Jude L. Capper, 2021. Data from: Statham et al. 2021. Dairy Cattle Health and Greenhouse Gas Emissions Pilot Study: Chile, Kenya and the UK. Available from: <https://dairysustainabilityframework.org/wp-content/uploads/2020/10/Dairy-Cattle-Health-and-GHG-Emissions-Pilot-Study-Report.pdf>



DS

GHG emissions could be cut significantly by mitigating dairy diseases - Kenya



Source: Created by Dr. Jude L. Capper, 2021. Data from: Statham et al. 2021. Dairy Cattle Health and Greenhouse Gas Emissions Pilot Study: Chile, Kenya and the UK. Available from: <https://dairysustainabilityframework.org/wp-content/uploads/2020/10/Dairy-Cattle-Health-and-GHG-Emissions-Pilot-Study-Report.pdf>



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%)



D

What about smallholders?



Source: Created by Dr. Jude L. Capper, 2021. Photo attribution: Mullookkaan, CC BY-SA 3.0 <<https://creativecommons.org/licenses/by-sa/3.0/>>, via Wikimedia Commons

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Livestock are a vital resource in developing regions



"For me, Send a Cow is everything"

Source: Created by Dr. Jude L. Capper, 2021. Photo from Send a Cow (2018) <https://www.sendacow.org/blog/for-me-send-a-cow-is-everything>



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Livestock are a vital resource in developing regions

“I started secondary school without a petticoat; that cow bought me my first petticoat. I cannot forget that.”

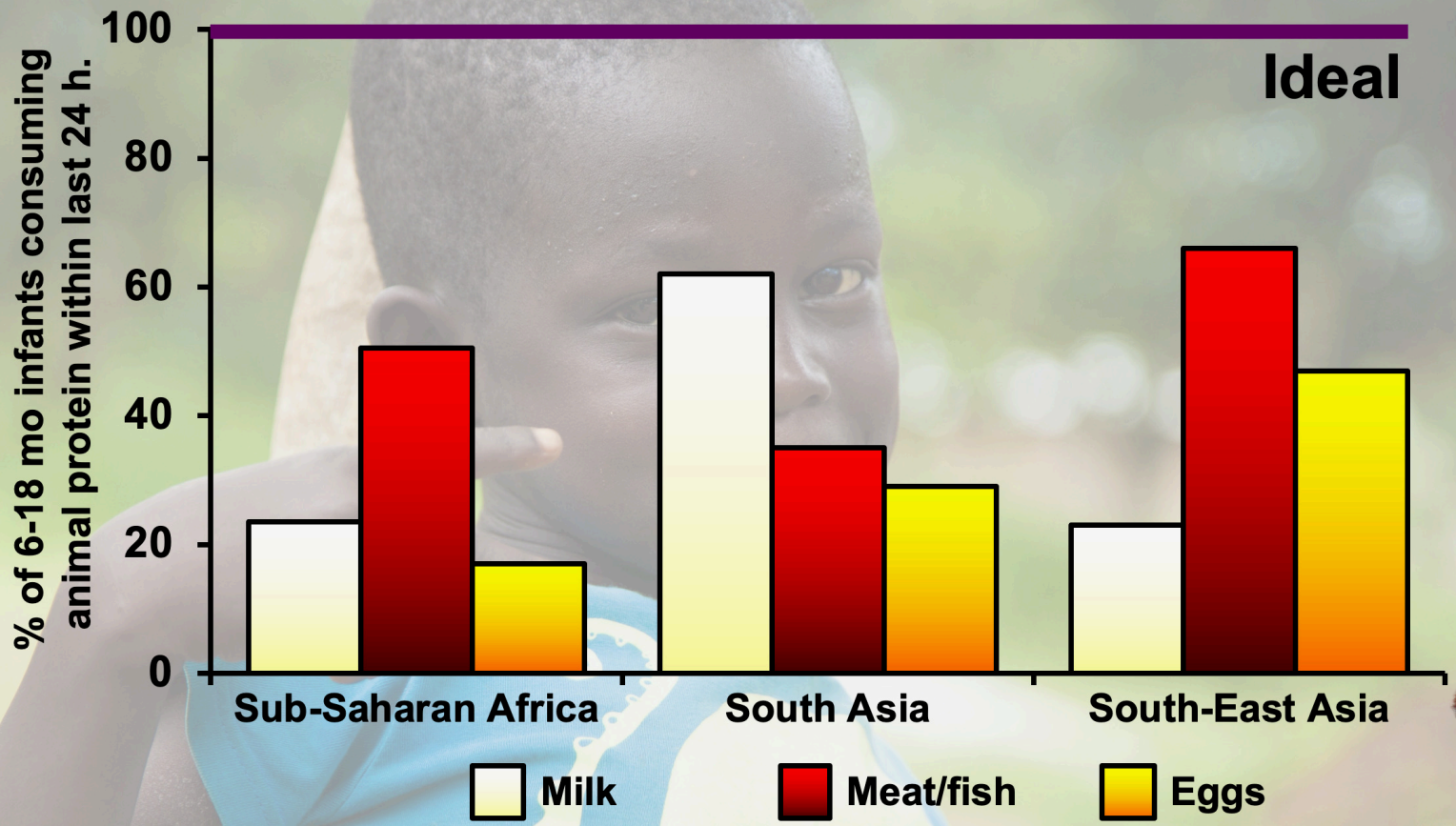
"For me, Send a Cow is everything"

Source: Created by Dr. Jude L. Capper, 2021. Photo from Send a Cow (2018) <https://www.sendacow.org/blog/for-me-send-a-cow-is-everything>



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Infants in developing regions are not getting enough animal protein



Source: Created by Dr. Jude L. Capper, 2021; Data from ILRI (2016) "The influence of livestock products (LP) on nutrition during the first 1000 days." Available at: <https://news.ilri.org/2016/05/31/livestock-for-better-nutrition-and-disease-control-one-health-colloquium-held-this-week-at-chatham-house/> Photo from: <https://pixabay.com/photos/child-village-africa-boy-people-4781932/>

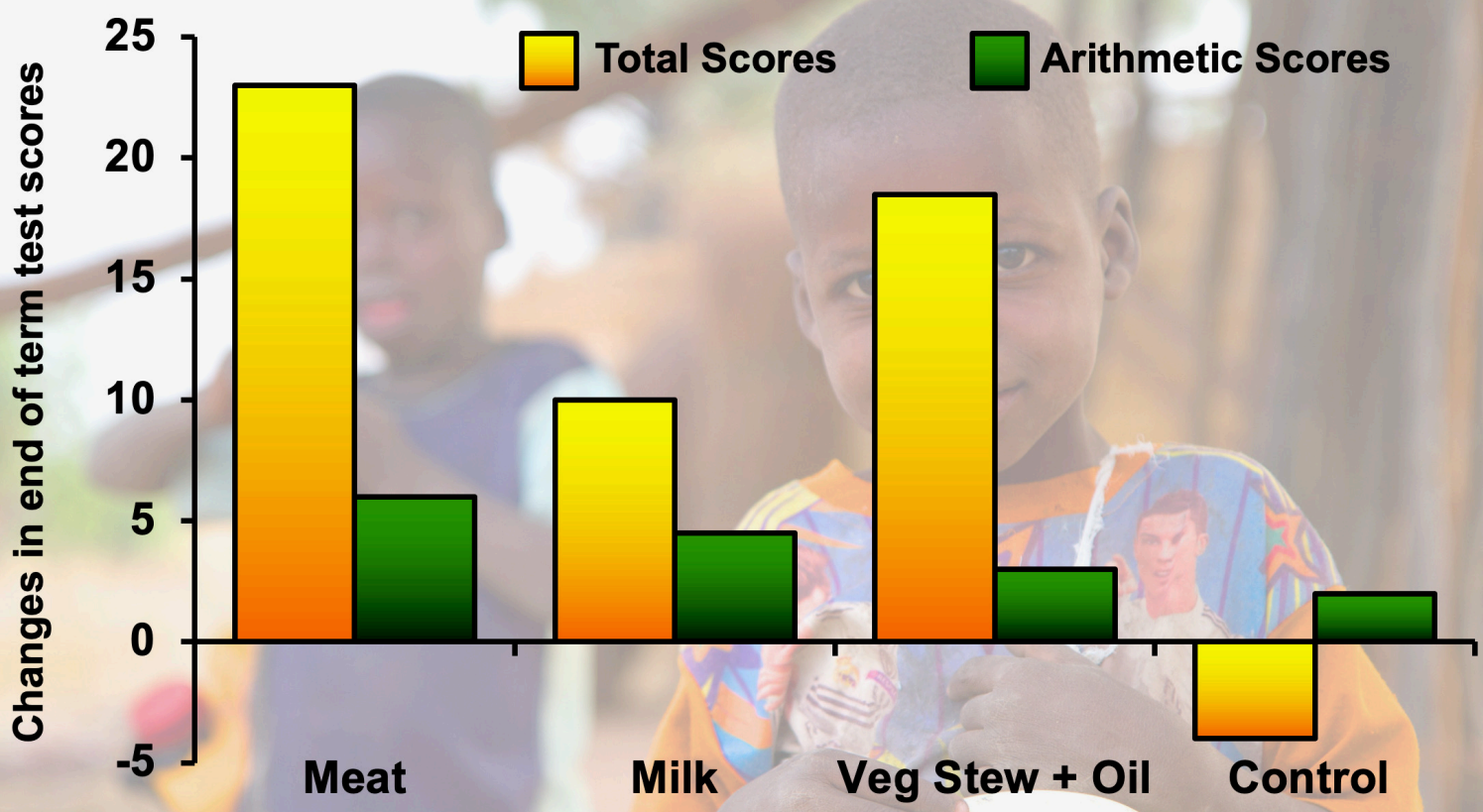


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Supplementing schoolchildren with animal protein improves academic test scores



Source: Created by Dr. Jude L. Capper, 2021; Data from Neumann et al. 2007. Meat supplementation improves growth, cognitive, and behavioral outcomes in Kenyan children *J. Nutr.* Photo from: https://upload.wikimedia.org/wikipedia/commons/thumb/1/1d/Happy_African_child.jpg/4096px-Happy_African_child.jpg



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How do we account for myriad livestock benefits in sustainability metrics?



Nutrition



Income



Fertiliser



Draught power



Cultural status



Education



Female emancipation



Source: Created by Dr. Jude L. Capper, 2021.

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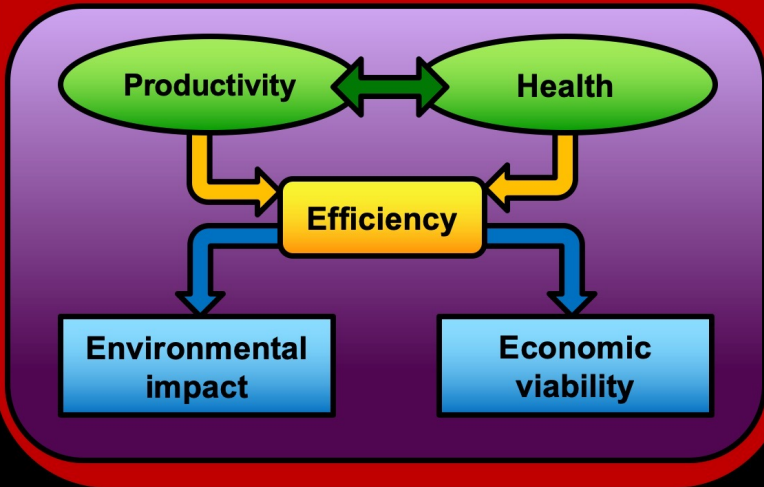


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Social acceptability and consumer trust are vital for sustainable livestock production



Social Acceptability



Sustainability



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

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

"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

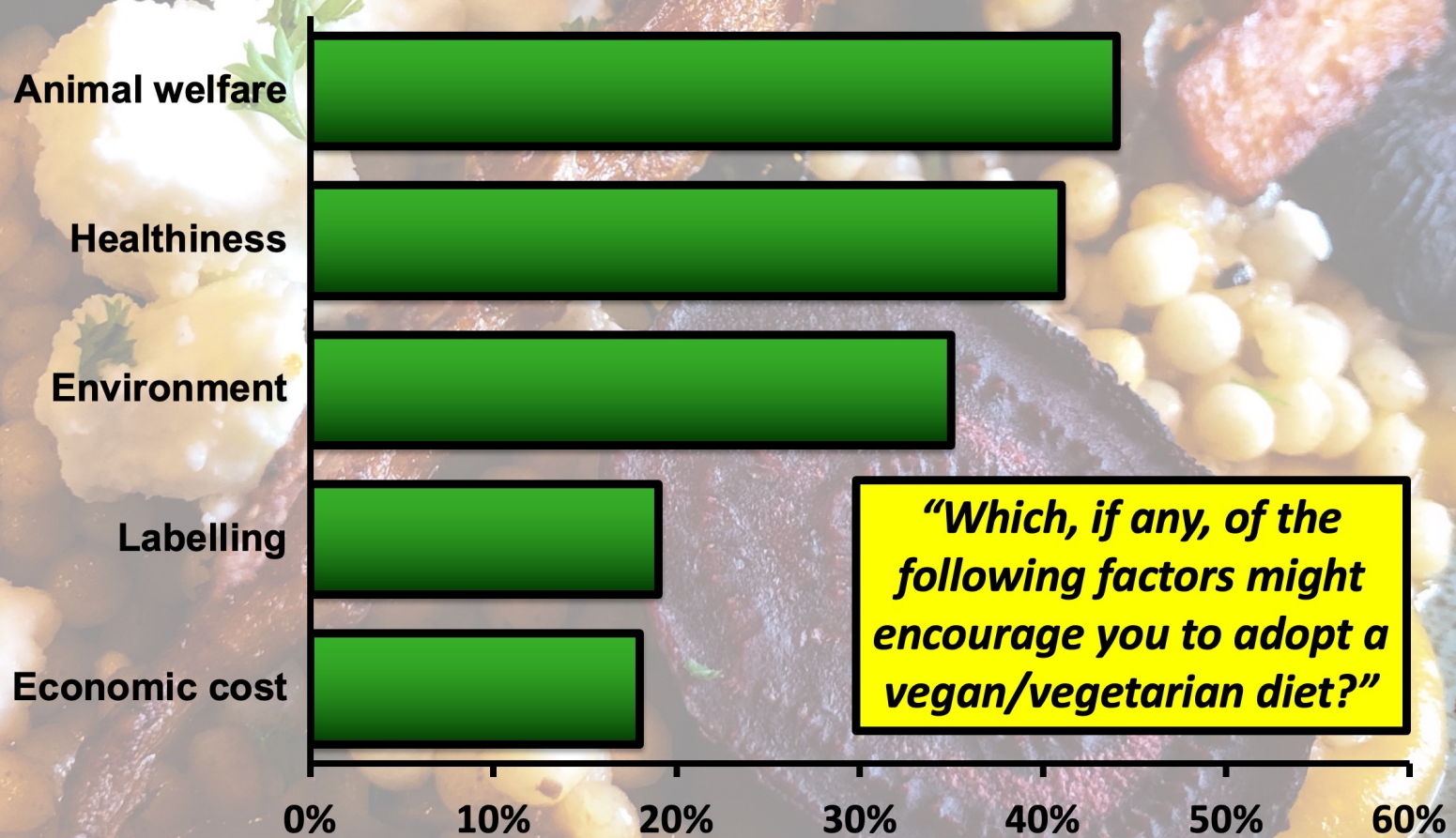
No guilt
34%

Feel guilty
66%



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

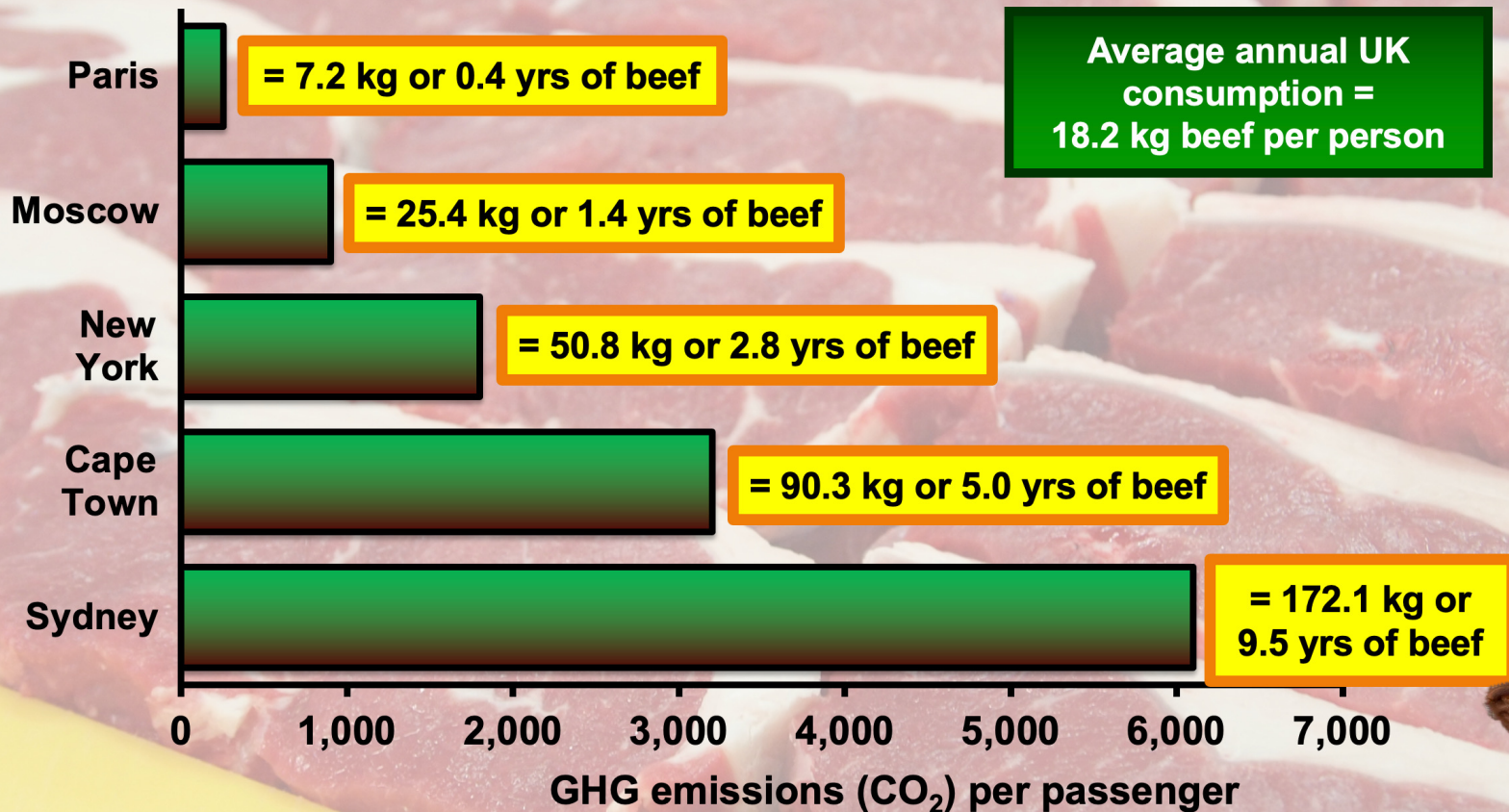


Source: Created by Dr. Jude L. Capper, 2020. Information from: YouGov (2019) Is the future of food flexitarian?
<https://yougov.co.uk/topics/resources/articles-reports/2019/03/18/future-food-flexitarian>



cv

International flights emit considerable quantities of carbon compared to beef production



B

Is a bacon sandwich going to kill us?



Processed meats do cause cancer - WHO

By James Gallagher
Health editor, BBC News website

🕒 26 October 2015 | **Health** | 📄

Processed meats - such as bacon, sausages and ham - do cause cancer, according to the World Health Organization (WHO).

Its report said 50g of processed meat a day - less than two slices of bacon - increased the chance of

“50g of processed meat a day - less than two slices of bacon - increased the chance of developing colorectal cancer by 18%.”

Source: Created by Dr. Jude L. Capper, 2016. Quote from: BBC. (2015) “Processed Meats Do Cause Cancer.” <http://www.bbc.com/news/health-34615621>

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Some day, we will all die...
but bacon is unlikely to be the cause

Average Briton has
5% risk of bowel
cancer.

18% risk increase
from eating
processed meat =
6% risk of bowel
cancer.

Or 94% risk of not
having bowel cancer.



Source: Created by Dr. Jude L. Capper, 2016; Data from: <https://bovidiva.com/2015/10/26/bringing-home-the-bacon-im-a-cancer-survivor-with-meat-on-the-menu/>

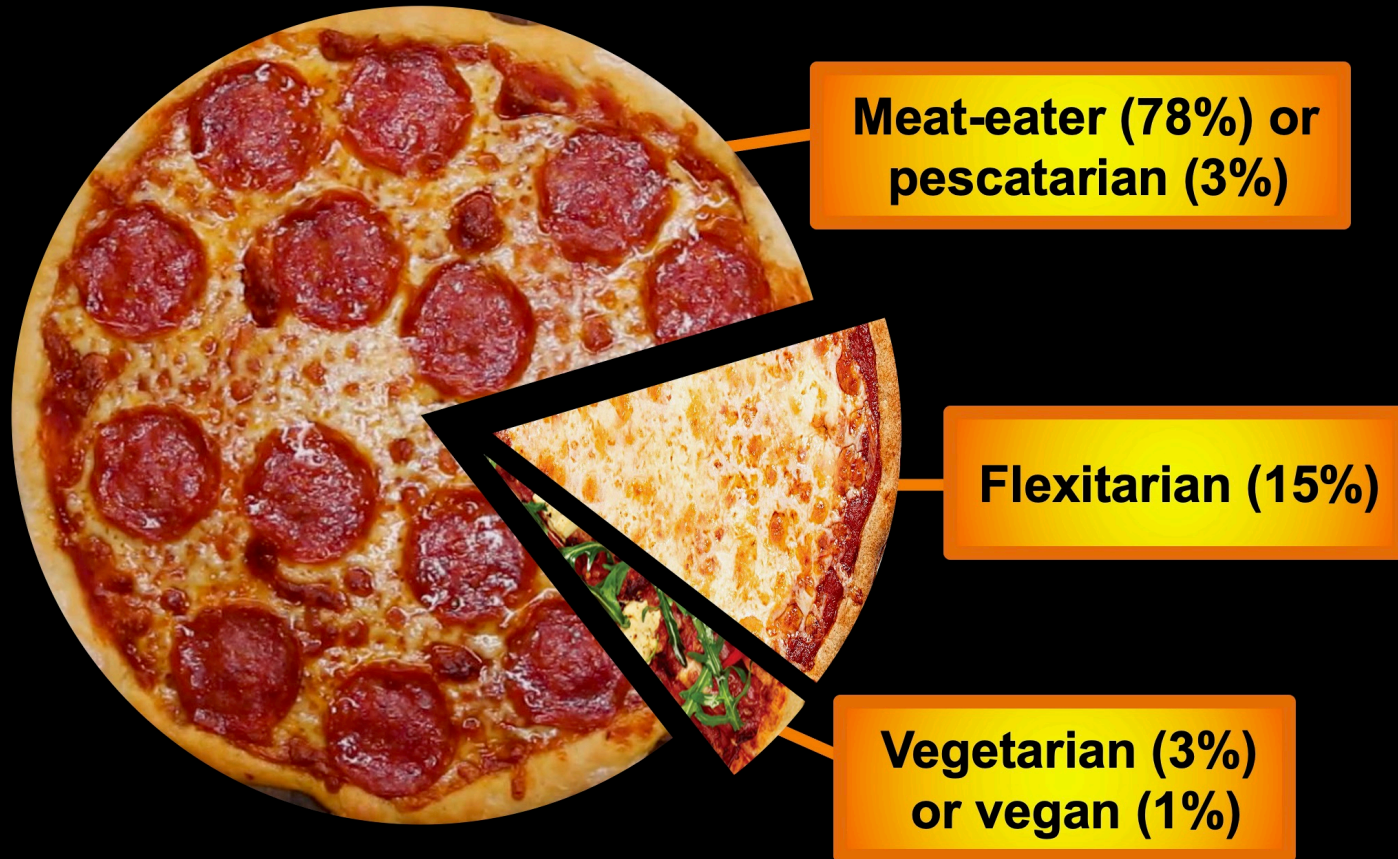


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The future probably isn't vegan, but it may be flexitarian?



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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%).

B

How do we make meat sexy?



Source: Created by Dr. Jude L. Capper, 2022.



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How do we make meat sexy?



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Source: Created by Dr. Jude L. Capper, 2022.

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How do we make meat sexy?



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Source: Created by Dr. Jude L. Capper, 2022.

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Has choosing dairy become a controversial issue?

“The dairy industry is more cruel and horrible than the meat industry... dairy is truly a pleasure and I really feel guilty.”

Victoria Coren Mitchell

Source: Created by Dr. Jude L. Capper, 2019.
Screenshot from Apple Podcasts app, photo from:
<https://www.radiotimes.com/>

OFF MENU



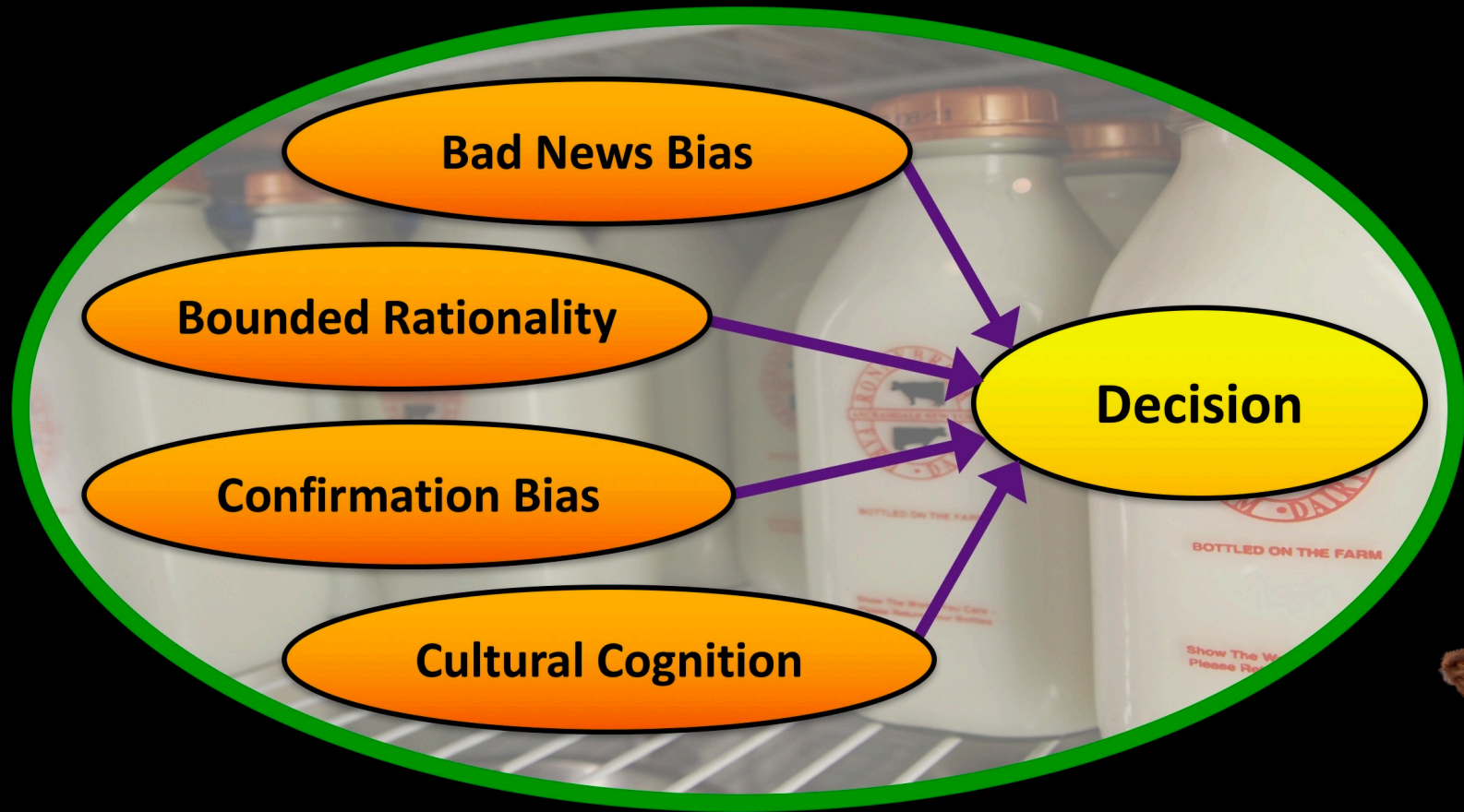
Ep 17: Victoria Coren Mitchell **E**
Off Menu with Ed Gamble and James A

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Four major processes influence consumer decision-making



DS

Bad news bias – we need five positive news items to overcome each negative article

MailOnline

Viewers' outrage over harrowing scenes of day-old calves being lined up and shot DEAD just because they're male

- Three Jersey calves were filmed being killed on the Channel 4 programme featuring farmer Jimmy Doherty
- Nearly 60 people complained about the graphic scenes aired at 9.30pm on Tuesday

By PAUL REVOIR FOR MAILONLINE

PUBLISHED: 23:29, 30 May 2012 | UPDATED: 10:55, 31 May 2012



1.1k
View comments

Harrowing scenes of newly-born dairy calves being lined up and shot dead simply because they are male have left television viewers sickened.

The images of three Jersey calves being killed were filmed to highlight the grim reality of the dairy industry.

When talking to consumers, it's impossible to justify killing male dairy calves on the basis of economic cost.

Source: Created by Dr. Jude L. Capper, 2019. Article from: <http://www.dailymail.co.uk/news/article-2152402/Viewers-outrage-harrowing-scenes-day-old-calves-shot.html>

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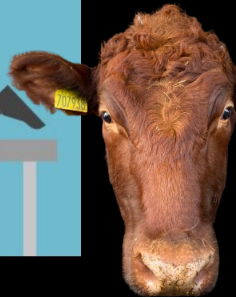
Bounded rationality - we don't have time to research, so need quick, simple explanations

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!



COM

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

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

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

HOME | NEWS

Sport | Rugby Union

Rugby Union | Fixtures | Results | Tables | Lions | Aviva Premiership | Brian Moore

Home > Sport > Rugby Union

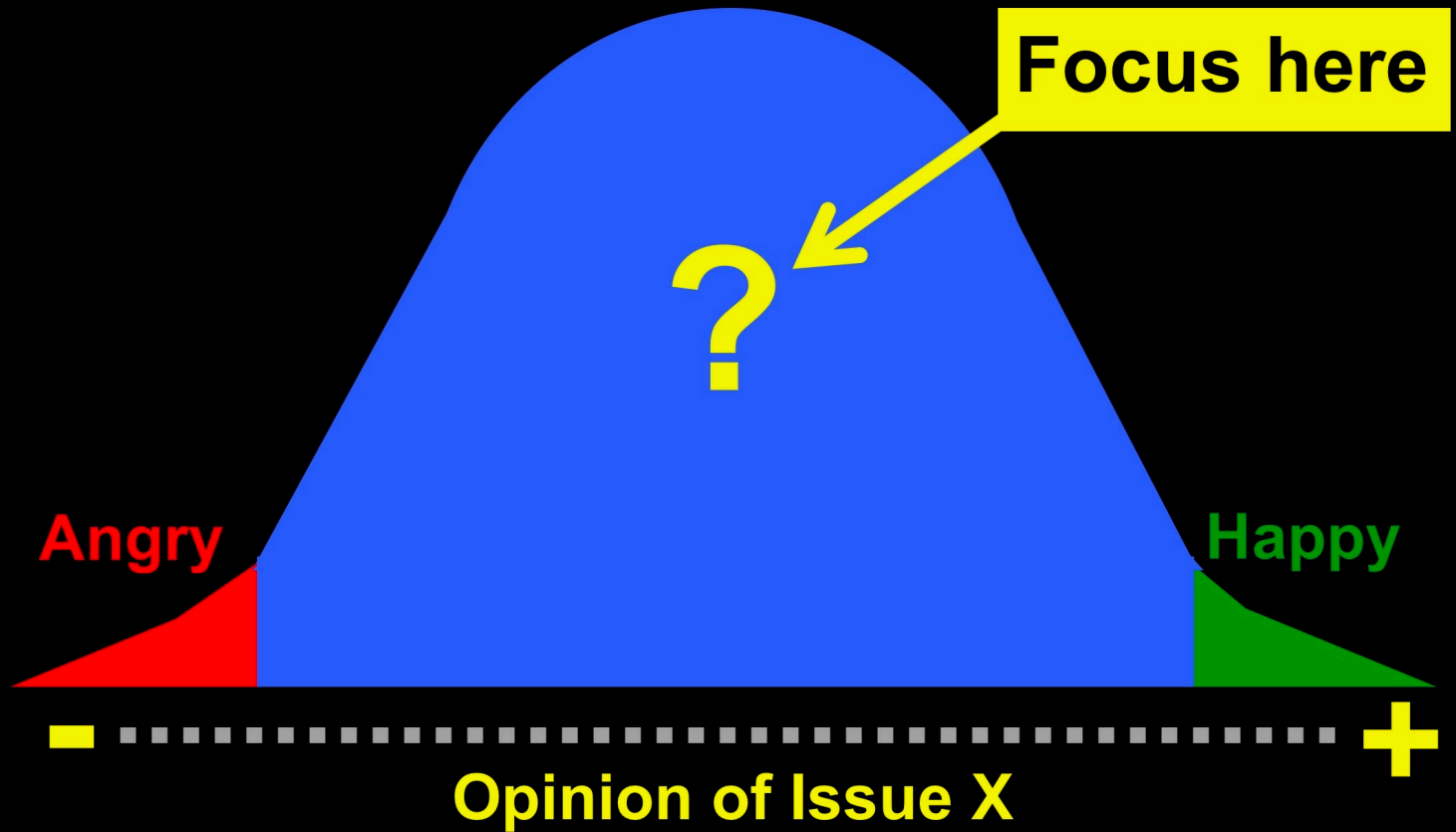
England prop Joe Marler reveals the secret behind his remarkable recovery in time for Six Nations



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We need to communicate with consumers who don't yet have fixed opinions of agriculture



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

COM

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*.



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You don't have to be the biggest,
you do need to do your best



Source: Created by Dr. Jude L. Capper, 2021.

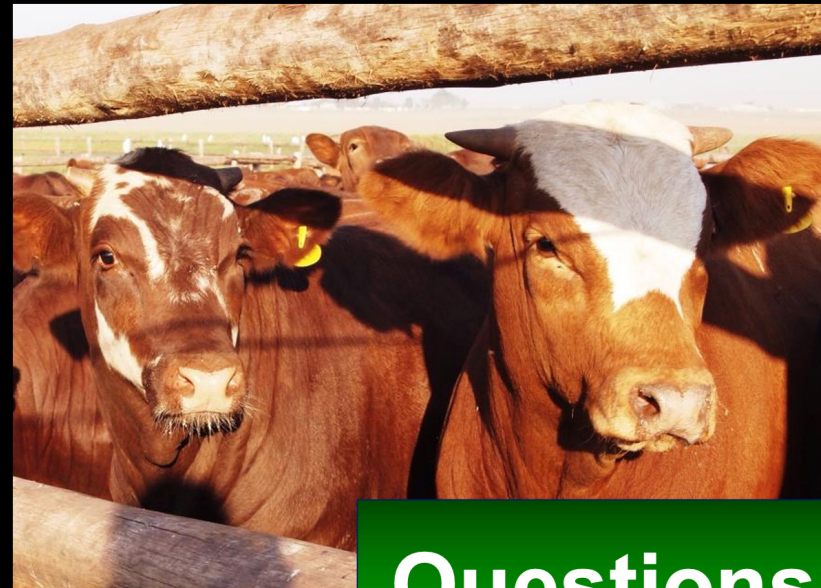
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Thank you!

Jcapper@Harper-Adams.ac.uk
<http://bovidiva.com/presentationlinks>

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Questions?



Source: Created by Dr. Jude L. Capper, 2021. Cartoon from: <http://RubesCartoons.com>