

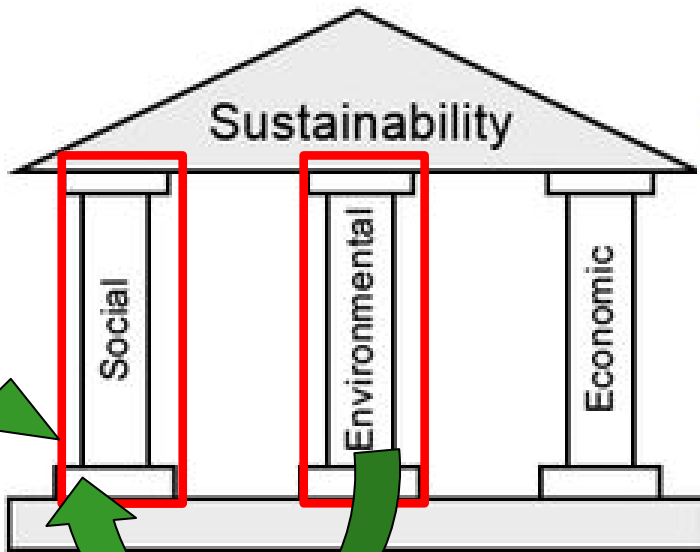
# Role of animal welfare in the sustainability of food production systems

**Laura Boyle**

*M.Agr.Sc., Ph.D.*

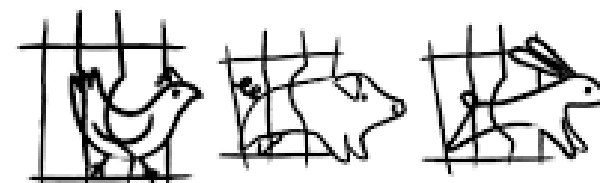
Animal and Grassland Research and Innovation Centre, Moorepark,  
Fermoy, Co. Cork, Ireland

# Sustainability of animal production systems

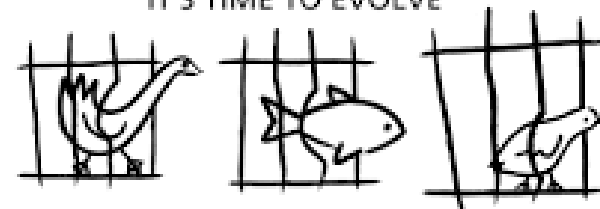


Working with nature

- Animal welfare?
- 94% of EU citizens



**END THE CAGE AGE**  
IT'S TIME TO EVOLVE





1.4 million signatures



# European Citizens' Initiative



**ANIMAL WELFARE**

## 'End the Cage Age' - An historic day for animal welfare

PUBLISHED 4 WEEKS AGO ON JUNE 30, 2021  
By Catherine Feore





# Societal/citizens concerns about farm animal welfare



*Complexity of the issues*

**BOVINE**  
VETERINARIAN

## Animal Welfare Demands Will Keep Coming

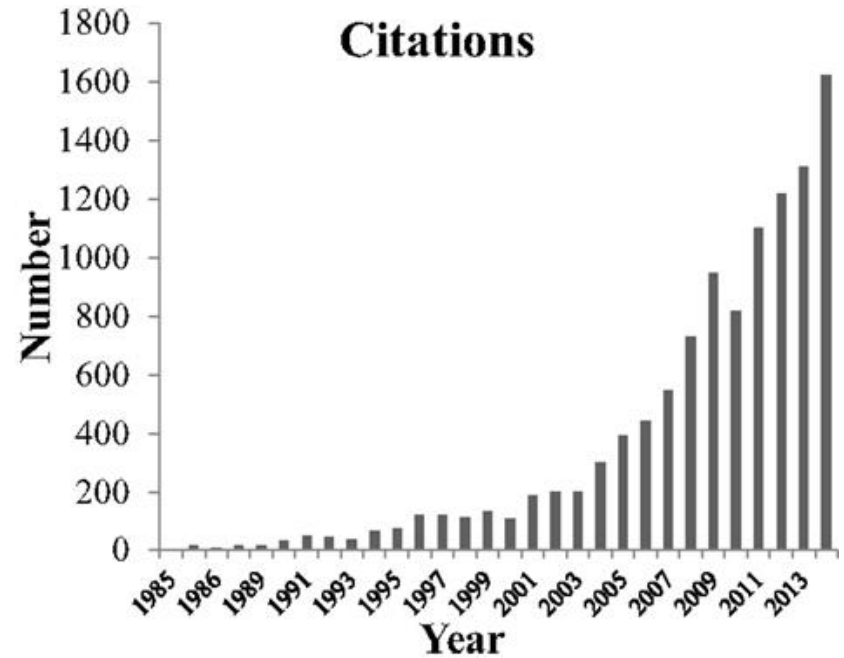
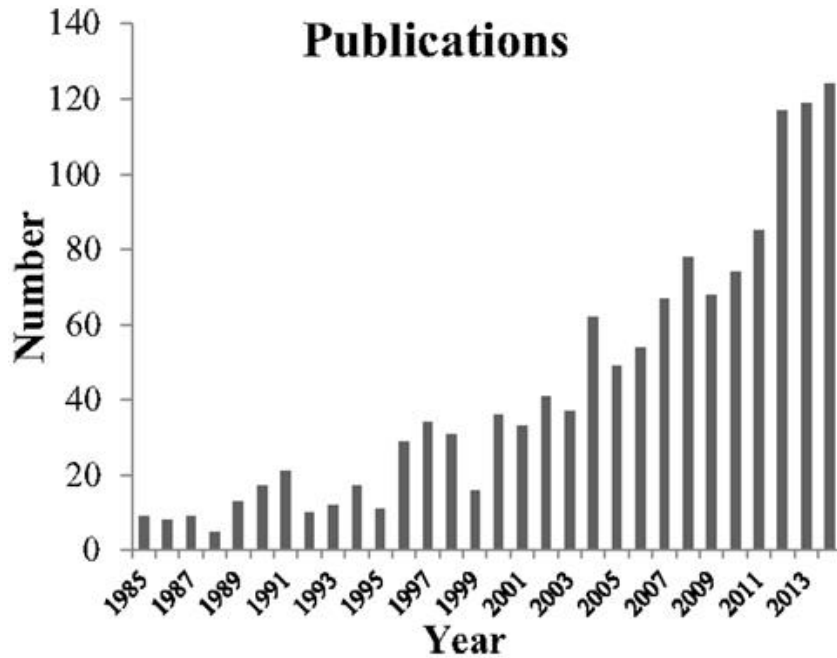
Jim Dickrell  
December 17, 2018 09:32 AM

f t p g+ in  
Print





# Societal concerns about animal welfare are increasingly supported by scientific evidence



*(Web of Science after Marchant Forde, 2014, Frontiers)*

**No. publications and citations of studies that include animal welfare and emotions (1985 to 2014)**





**‘Quality of life’** *(Marchant, 2014 – Frontiers)*

**‘A life worth living’** *(Mellor, 2016 - Animals)*

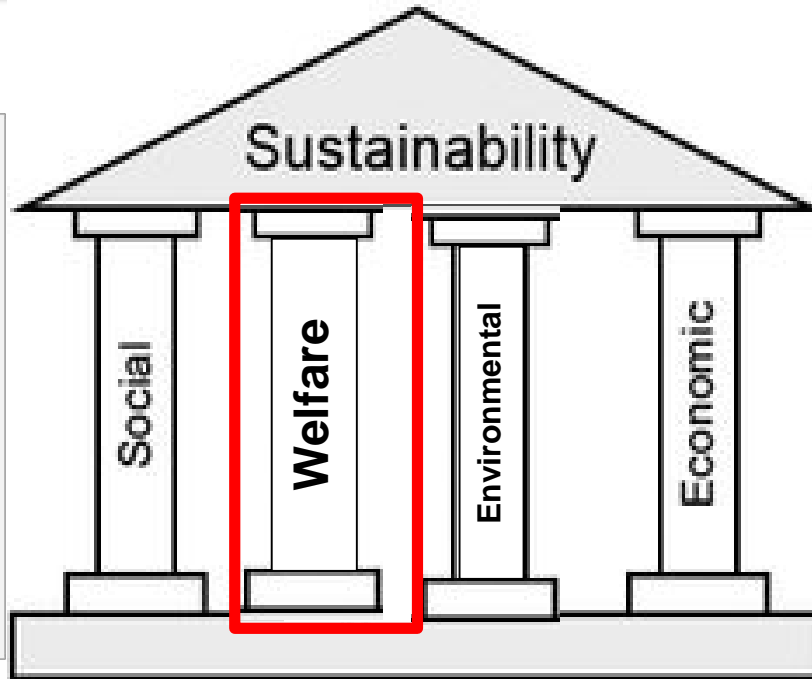




**Time to consider a 4<sup>th</sup> pillar?**



# The 4th Pillar: Animal welfare



Review

## Towards Farm Animal Welfare and Sustainability

Henry Buller <sup>1,\*</sup>, Harry Blokhuis <sup>2</sup>, Per Jensen <sup>3</sup> and Linda Keeling <sup>2</sup>

frontiers  
in Veterinary Science

ORIGINAL RESEARCH  
published: 10 October 2019  
doi: 10.3389/fvets.2019.00036



## Animal Welfare and the United Nations Sustainable Development Goals

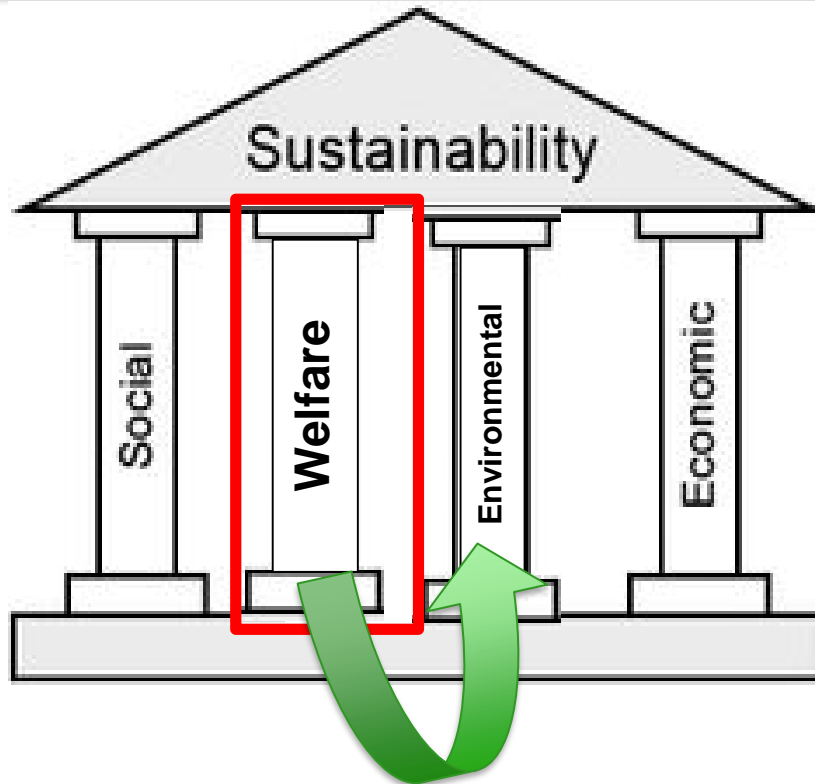
Linda Keeling<sup>1\*</sup>, Håkan Tunón<sup>2</sup>, Gabriela Olmos Antillón<sup>3</sup>, Charlotte Berg<sup>1</sup>, Mike Jones<sup>2</sup>, Leopoldo Stuardo<sup>4</sup>, Janice Swanson<sup>5</sup>, Anna Wallenbeck<sup>1</sup>, Christoph Winckler<sup>6</sup> and Harry Blokhuis<sup>1</sup>

## SUSTAINABLE DEVELOPMENT GOALS





# The 4th Pillar: Animal welfare



*Animal* (2017), 11:2, pp 274–284 © The Animal Consortium 2016  
doi:10.1017/S1751731116001440

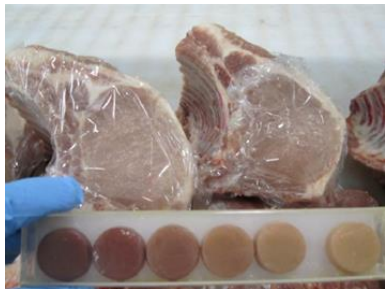
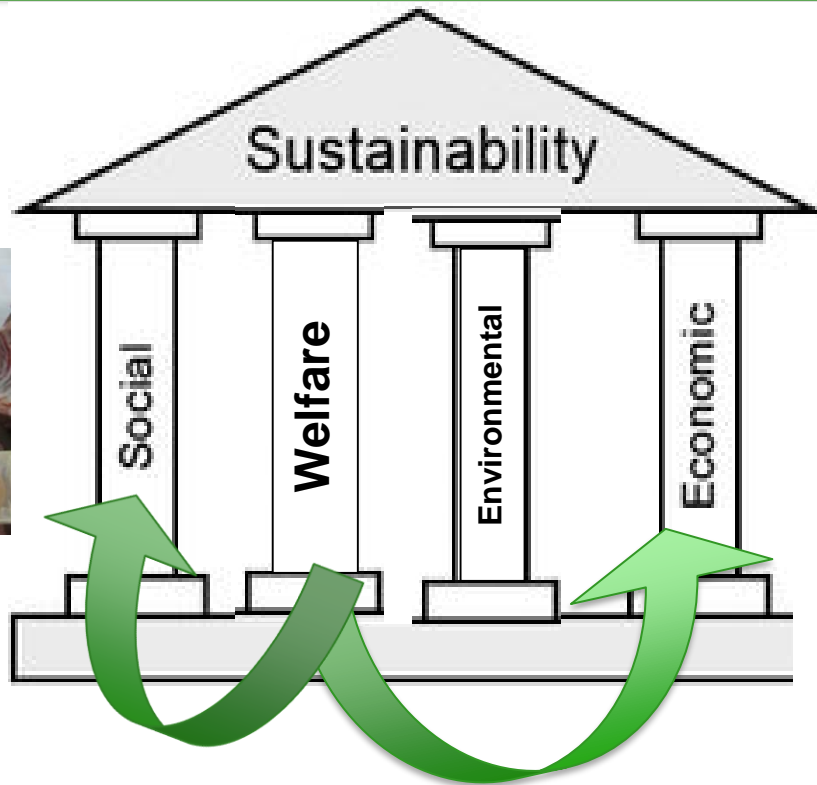


**Review: current available strategies to mitigate greenhouse gas emissions in livestock systems: an animal welfare perspective**

P. Llonch<sup>1†a</sup>, M. J. Haskell<sup>1</sup>, R. J. Dewhurst<sup>2</sup> and S. P. Turner<sup>1</sup>



# Animal welfare → animal health





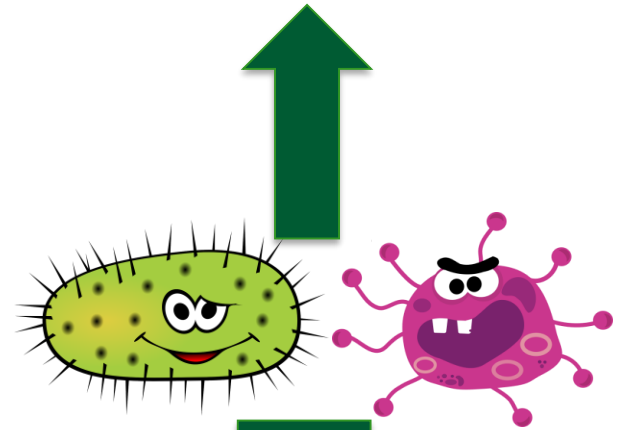
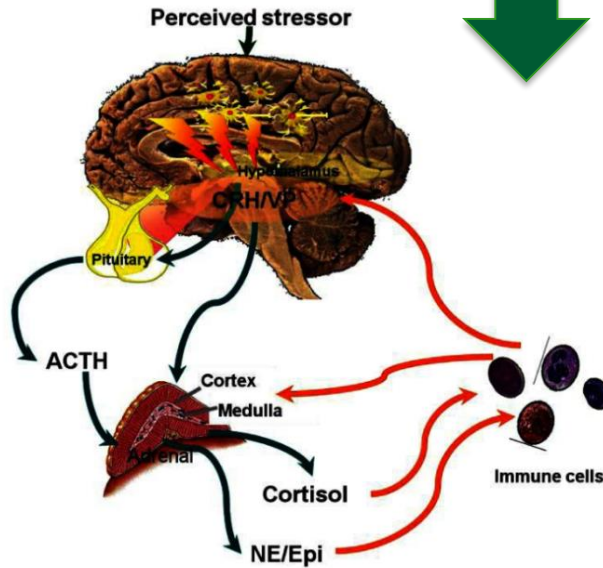




# STRESS

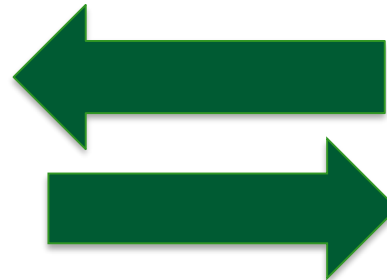
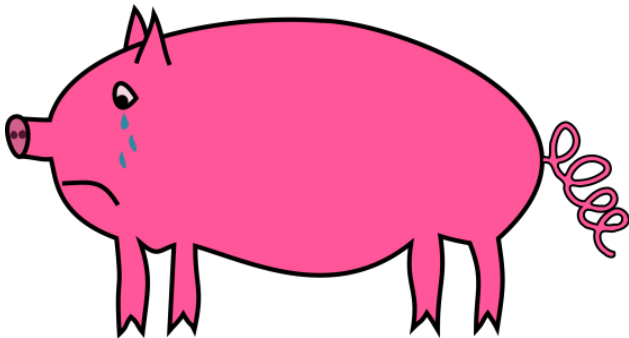
## Immunity

## Disease susceptibility



## Poor welfare

## Poor health

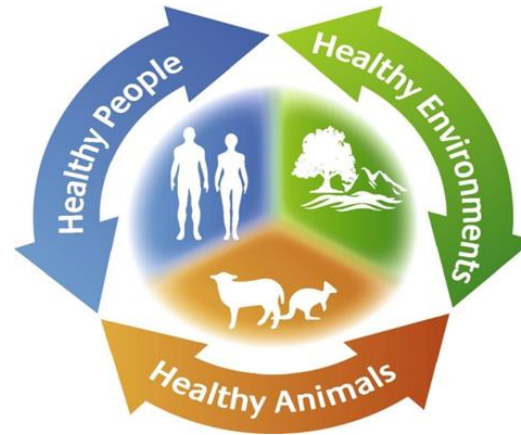


# Animal production and antimicrobial (AM) use

- AM are an effective tool to control/treat infectious diseases
- Weaning=numerous simultaneous stressors
- AM widely used around weaning
- AM provided in-feed (penicillins and tetracyclines)
- Over reliance on AM in animal production industries



# Antimicrobial resistance (AMR)

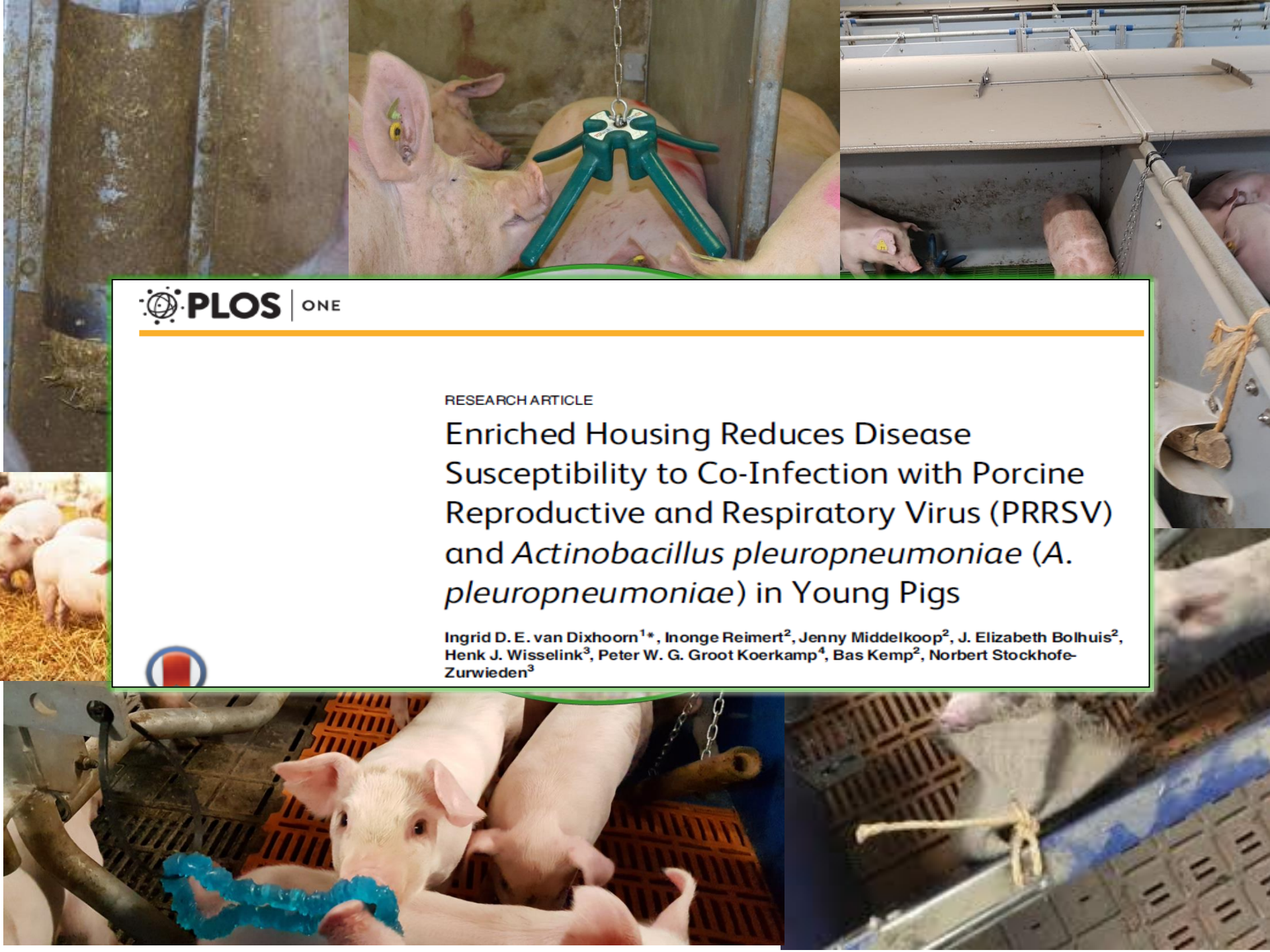




RESEARCH ARTICLE

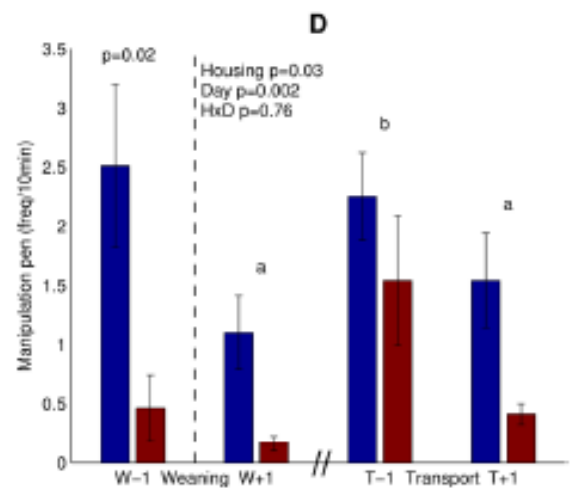
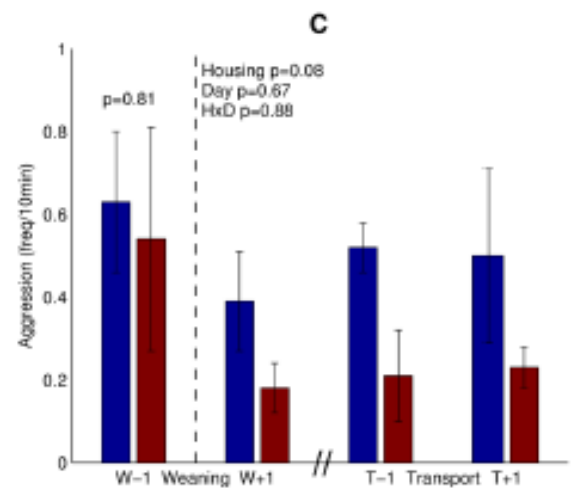
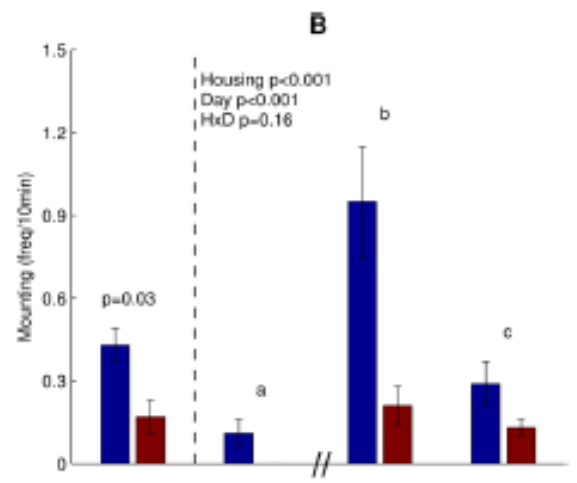
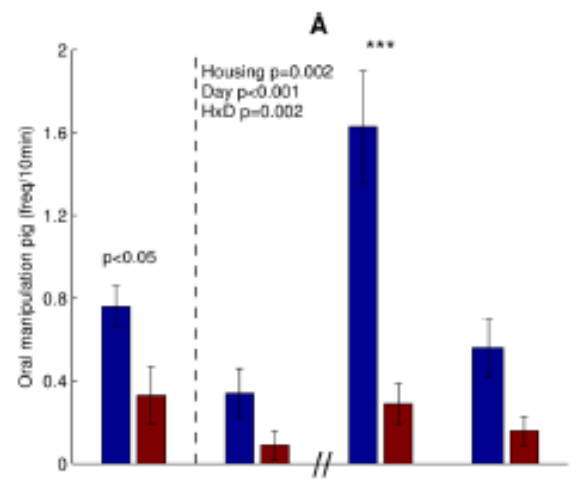
# Enriched Housing Reduces Disease Susceptibility to Co-Infection with Porcine Reproductive and Respiratory Virus (PRRSV) and *Actinobacillus pleuropneumoniae* (*A. pleuropneumoniae*) in Young Pigs

Ingrid D. E. van Dixhoorn<sup>1\*</sup>, Inonge Reimert<sup>2</sup>, Jenny Middelkoop<sup>2</sup>, J. Elizabeth Bolhuis<sup>2</sup>, Henk J. Wisselink<sup>3</sup>, Peter W. G. Groot Koerkamp<sup>4</sup>, Bas Kemp<sup>2</sup>, Norbert Stockhofe-Zurwieden<sup>3</sup>



# Penmate and pen directed behaviours during lactation and post-weaning

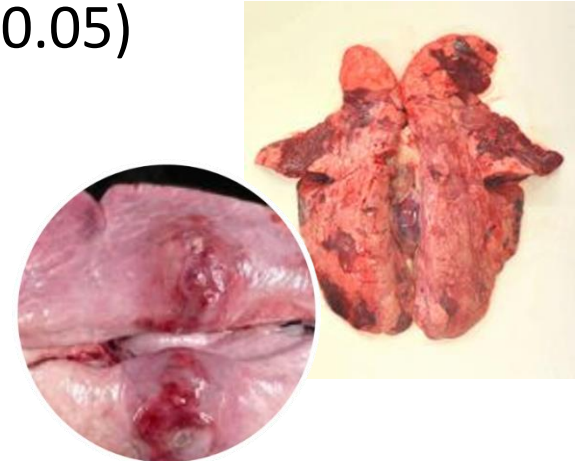
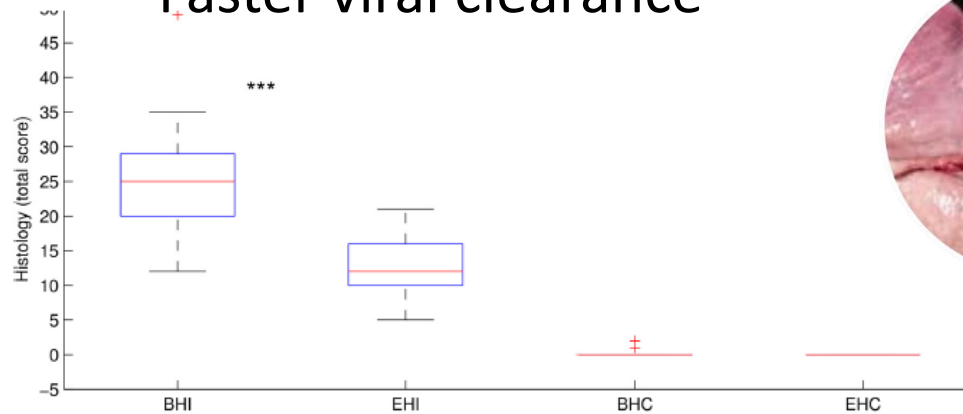
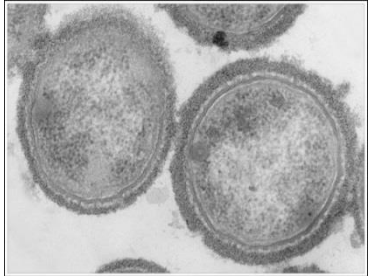
Barren
  Enriched



# Co-infection with PRRS and APP

- **Enriched** housed pigs

- Fewer with lung lesions: 1/14 (7%) vs. 8 of 14 (57%) affected (OR 19.2,  $P < 0.05$ )
- Less severe pathologies
- Faster viral clearance



*Van Dixhoorn et al., 2016 PlosOne*

© 2019 Universities Federation for Animal Welfare  
The Old School, Brewhouse Hill, Wheathampstead,  
Hertfordshire AL4 8AN, UK  
[www.ufaw.org.uk](http://www.ufaw.org.uk)

*Animal Welfare* 2019, 28: 137-141  
ISSN 0962-7286  
doi: 10.7120/09627286.28.2.137

*Animal welfare as preventative medicine*

MS Dawkins



“Good welfare could turn out to be one of the best vaccines available with huge added commercial and social benefits”



- Neg. status > Pos. status
- Pos. status: UnVaxd > Vaxd

[Natural] prevention, through good housing and management (i.e. good welfare) is more profitable

# Improving pig welfare to improve pig health

 **frontiers**  
in Veterinary Science

ORIGINAL RESEARCH  
published: 06 March 2018  
doi: 10.3389/fvets.2018.00041



## Connecting Different Data Sources to Assess the Interconnections between Biosecurity, Health, Welfare, and Performance in Commercial Pig Farms in Great Britain

Fanny Pandolfi<sup>1\*</sup>, Sandra A. Edwards<sup>1</sup>, Dominiek Maes<sup>2</sup> and Ilias Kyriazakis<sup>1</sup>

The interconnections identified between health indicators, welfare outcomes, and production performance appear as a compelling reason to consider the improvement of animal welfare as one of the main objective of the pig industry.





# Conclusion 1

A photograph of two cows in a lush green field. On the left, a black cow stands facing right. On the right, a larger black and white cow stands facing left. The field is enclosed by a wooden fence. The background shows rolling green hills under a bright blue sky with scattered white clouds.

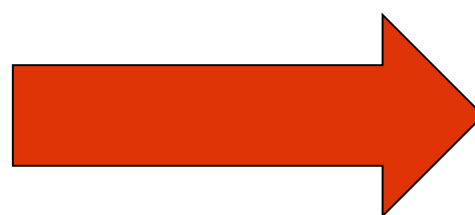
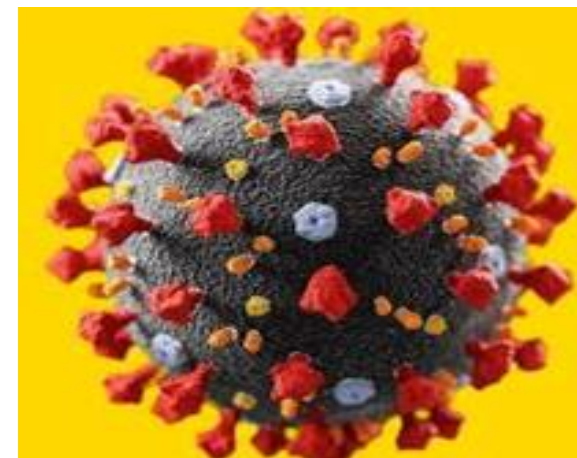
**Improving farm animal welfare is integral to the sustainability of the worlds animal production industries**





# COVID-19 Effects on Livestock Production: A One Welfare Issue

Jeremy N. Marchant-Forde<sup>1\*</sup> and Laura A. Boyle<sup>2</sup>



Viewpoint

## Viewpoint

One Welfare – a platform for improving human and animal welfare

R. Garcia Pinillos, M. Appleby, X. Manteca, F. Scott-Park, C. Smith, A. Velarde

# Covid-19



- Intensive livestock production systems
  - Max. output/operate at full capacity
  - Impact of any disruption felt immediately up and downstream
- Effects on supply chains
  - ↑ whole egg demand ↓ liquid egg
- Outbreaks in meat plants
  - 40k cases, +420 plants, 40 states, 49 shutdowns
- Line speed waivers (↑140 to 175 birds/min)



WORLD ECONOMIC FORUM  
Agenda Platforms Reports Events Videos English

Industry Agenda COVID-19 United States Agriculture, Food and Beverage

## U.S. dairy farmers dump milk as pandemic upends food markets

Independent.ie

News Opinion Business Sport Life Style Entertainment Travel Secto

Coronavirus Europe Britain North America US Presidential Election 2020 Latin America Middle East Asia

### Shut down meat plants with major Covid outbreaks

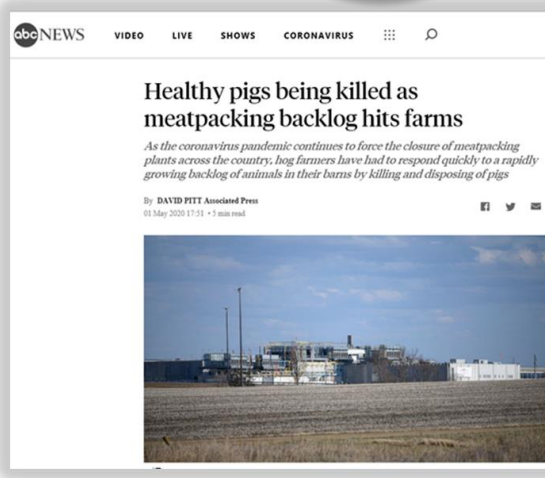
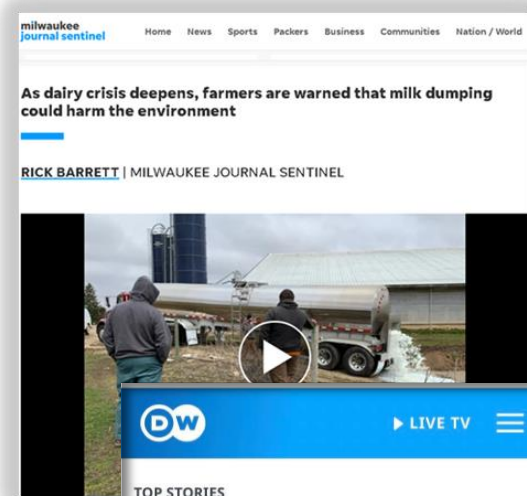


Meat factories with major Covid outbreaks should be shut down, union says

# COVID-19



Peter and Trine Brinkmann Nielsen put their flag to half-mast on November 5, 2020 at their mink farm in northern Denmark, as they will have to cull their 250,000 animals. /Claus Bjoern Larsen/Ritzau Scanpix/AFP





# Solutions

- Production
  - Mobile incineration units
- Processing
  - ↑ capacity: 5.4 to 7 days = 30% ↑
  - local/mobile abattoirs
- Retail
  - ‘Slow food’, ‘local produce’/direct to consumer retail models
- Consumption (Initial changes = One Welfare benefits)
  - ↑ basic ingredients/home prepared meals
  - ↑ plant based meat alternatives (???)
  - Shift from high meat to unprocessed plant based foods



## COVID-19 Effects on Livestock Production: A One Welfare Issue

Jeremy N. Marchant-Forde<sup>1\*</sup> and Laura A. Boyle<sup>2</sup>

# Long-term solutions

- Policy change
- Sustainable intensification
- Moderate demand for animal products
- ↓ food waste



## COVID-19 Effects on Livestock Production: A One Welfare Issue

Jeremy N. Marchant-Forde<sup>1\*</sup> and Laura A. Boyle<sup>2</sup>

The Guardian International edition

Search jobs Sign in Search

LifeLifestyle More

cas Asia Australia Middle East Africa Inequality Global development

This article is more than 9 months old

### 'Exploitative conditions': Germany to reform meat industry after spate of Covid-19 cases

Ban on use of subcontractors and fines of €30,000 for slaughterhouses breaching new labour regulations a 'historic moment', say campaigners

- Coronavirus - latest updates
- See all our coronavirus coverage

▲ Coesfeld in North Rhine-Westphalia, where more than 270 Westfleisch workers tested positive. Photograph: Sascha Steinbach/EPA

Contents lists available at SciVerse ScienceDirect

### Biological Conservation

journal homepage: [www.elsevier.com/locate/biocon](http://www.elsevier.com/locate/biocon)

Special Issue Article: Advancing Environmental Conservation: Essays In Honor Of Navjot Sodhi  
Global food security, biodiversity conservation and the future of agricultural intensification

Teja Tschamtko<sup>a,\*</sup>, Yann Clough<sup>a</sup>, Thomas C. Wanger<sup>b,c</sup>, Louise Jackson<sup>d</sup>, Iris Motzke<sup>a,c</sup>, Ivet John Vandemeer<sup>f</sup>, Anthony Whitbread<sup>g</sup>

### International Journal of Agricultural Sustainability

ISSN: 1473-9903 (Print) 1747-762X (Online) journal homepage: <https://www.tandfonline.com/loi/taag20>

Addressing the Faustian bargain of the modern food system: connecting sustainable agriculture with sustainable consumption

Colin Sage

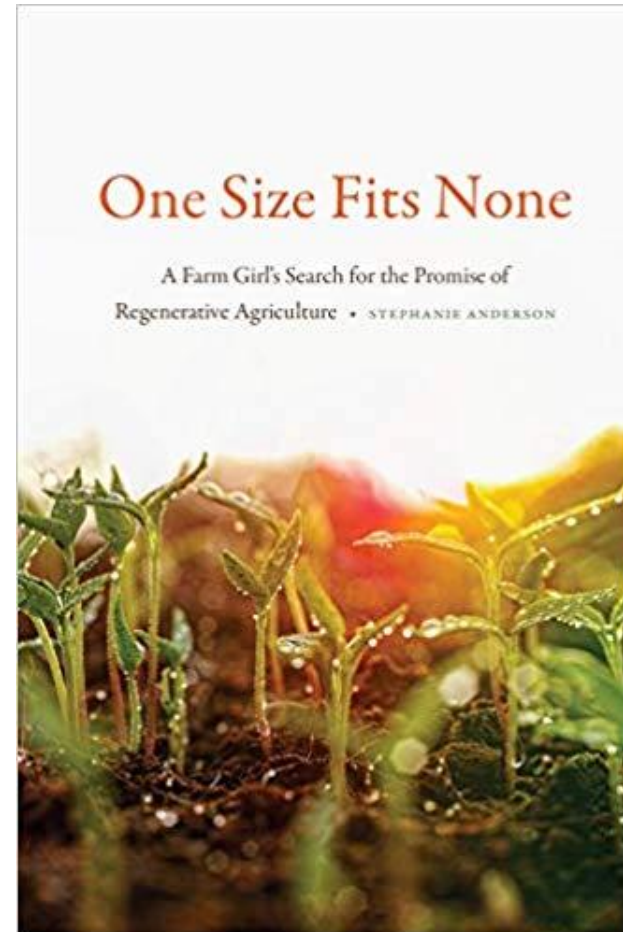
# #OneWelfare solution



‘One Welfare’ encourages collaboration to improve human/animal welfare, food security, health of the environment/biodiversity and encourage responsible antibiotic use



# Alternative production systems





# “One size fits none”



PROCEEDINGS  
— OF —  
THE ROYAL SOCIETY

B

Sustainable, efficient livestock production with high biodiversity and good welfare for animals

D. M. Broom<sup>1</sup>, F. A. Galindo<sup>1,2</sup> and E. Murgueitio<sup>3</sup>

[rspb.royalsocietypublishing.org](http://rspb.royalsocietypublishing.org)

productive than pasture alone. When compared with widely used livestock production systems, silvopastoral systems can provide efficient feed conversion, higher biodiversity, enhanced connectivity between habitat patches and better animal welfare, so they can replace existing systems in many parts of the world and should be further developed.

Forbes

Feb 20, 2020, 02:00am EST | 4,447 views

## Kipster's Golden Egg: How To Build A Profitable And Scalable Sustainable Business



Jeroen Kraaijenbrink Contributor @

Leadership

*I help companies do strategy*



One step beyond organic or free-range: Dutch farmer's chickens lay carbon-neutral eggs

Poultry owner claims his new approach has the highest welfare standards and lowest cost to environment



Corporate For  
Animals Award 2018

Proud like a chicken!

EUROGROUP  
FOR ANIMALS



Good Egg Award 2018

Many thanks  
to the people of  
Compassion in World Farming!

COMPASSION  
in world farming





# Conclusion 2

This model needs to be re-shaped to include the animal, human, and environmental elements across the farm to fork chain. Such a One Welfare approach will ensure that food production systems are resilient, flexible, and fair in the face of future challenges.





# Thank you!

ONE WELFARE CIC PRESENTS

III

## ONE WELFARE WORLD CONFERENCE



### BURGOS

15-16TH SEPTEMBER 2021  
BURGOS, SPAIN

ARE YOU READY FOR SOMETHING BIG??

WE ARE PROVIDING AN AMAZING CONFERENCE, NEXT TO THE MUSEUM OF HUMAN EVOLUTION, TO PRESENT ONE WELFARE WORK TO DATE AND DISCUSS ON WHAT IS COMING UP.



## 8th INTERNATIONAL CONFERENCE ON THE ASSESSMENT OF ANIMAL WELFARE AT FARM AND GROUP LEVEL

Web: [www.wafl2021.com](http://www.wafl2021.com) | Email: [Wafl2021@abbey.ie](mailto:Wafl2021@abbey.ie) | [@wafl2021](https://twitter.com/wafl2021) #WAFL2021

16 - 19 August 2021

Virtual Conference