

Sustainability in the dairy goat industry

The role of research in staying ahead of future challenges



Dr. Gosia Zobel

Ontario Goat Annual General
Meeting & Producer
Education Day
February 25, 2015



animal welfare
program



Ontario Veterinary College
POPULATION MEDICINE



Thanks to Nina von Keyserlingk (UBC Animal Welfare Program) for providing the slides pertaining to sustainability and dairy cow research

Plan

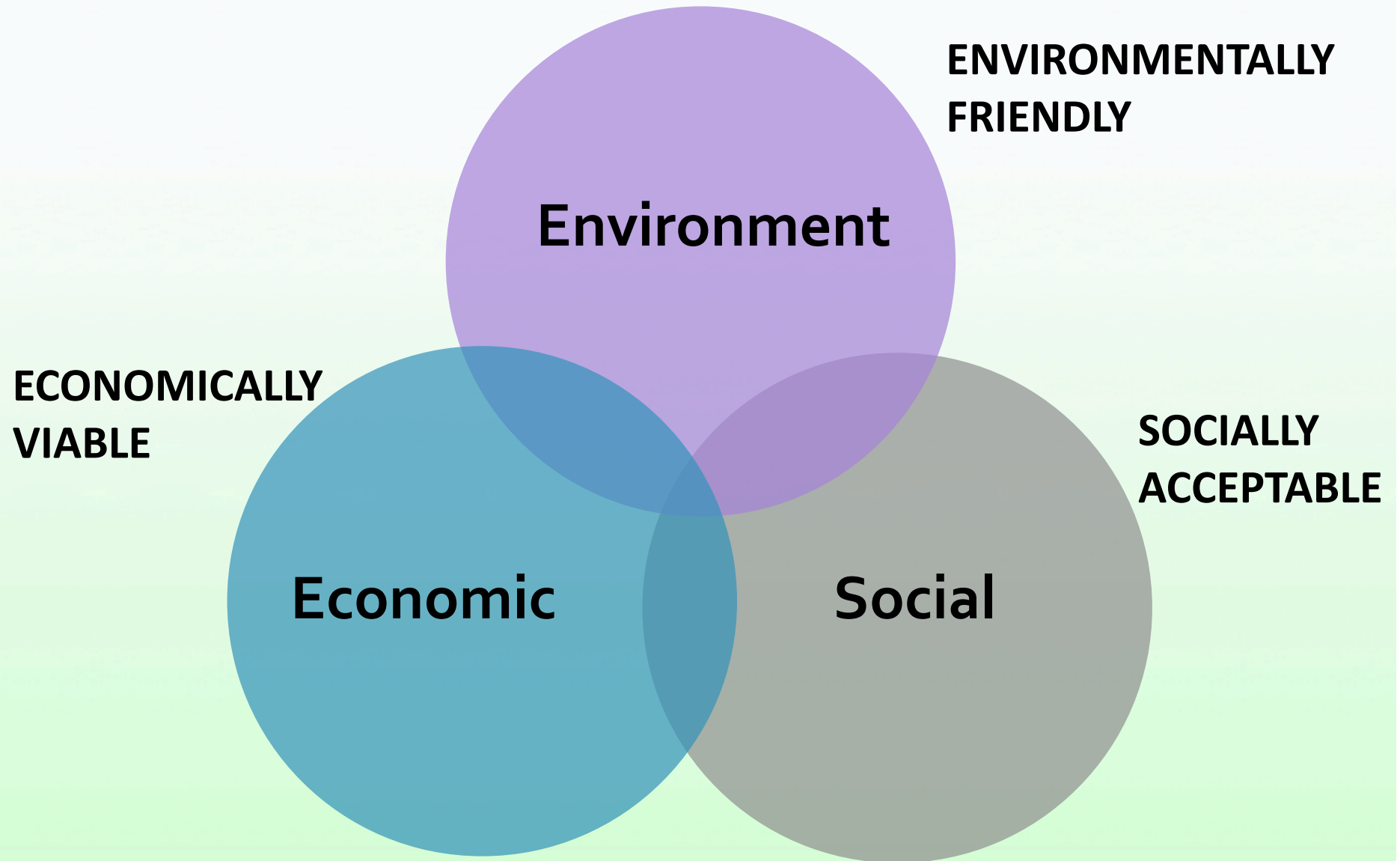
What is sustainability?

How will addressing “animal welfare” help with maintaining sustainability?

Examples of issues faced by other industries

Possible issues the dairy goat industry may face... and some research to address them

Sustainability?



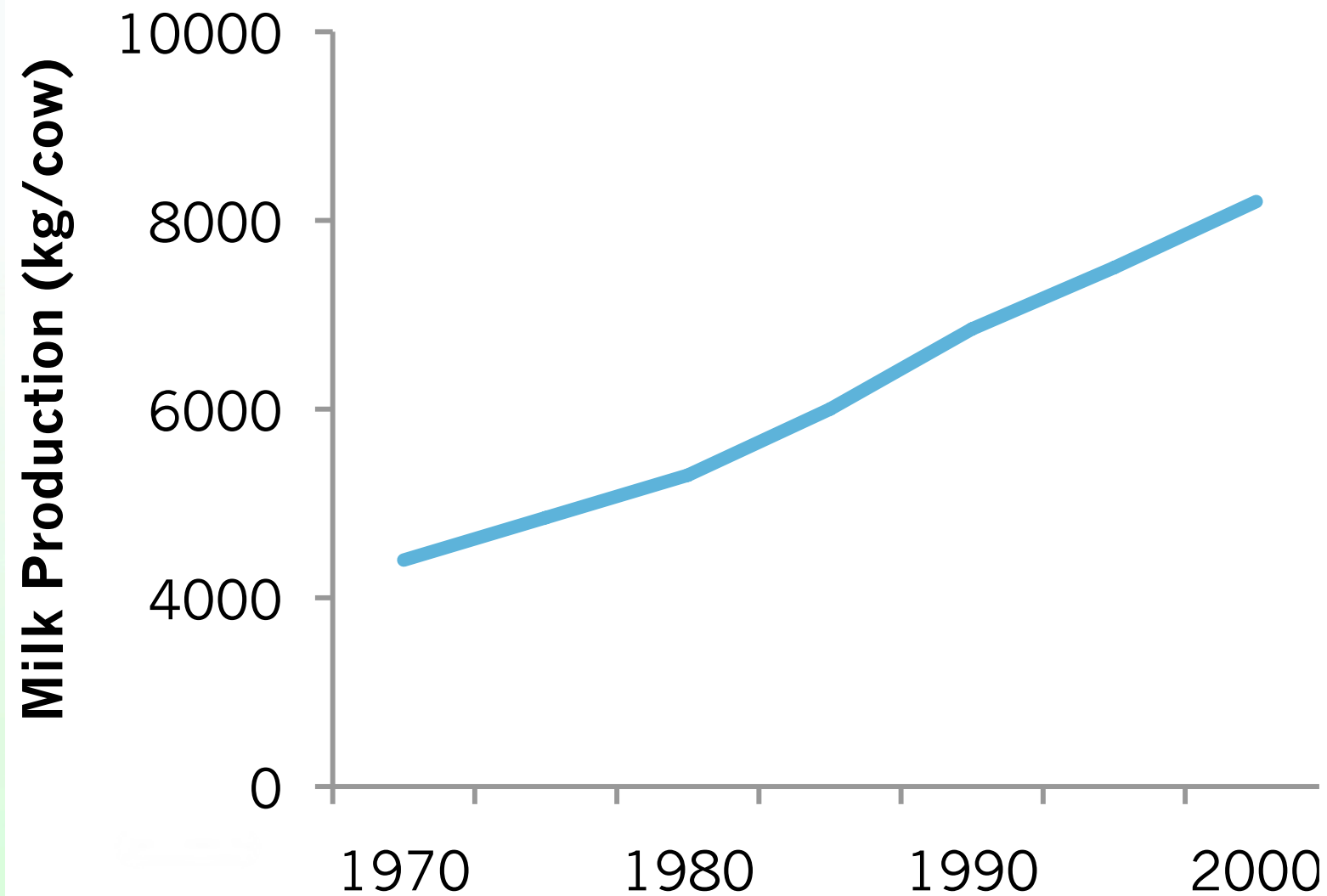
Challenge

Economics is typically the driving force in most production animal industries

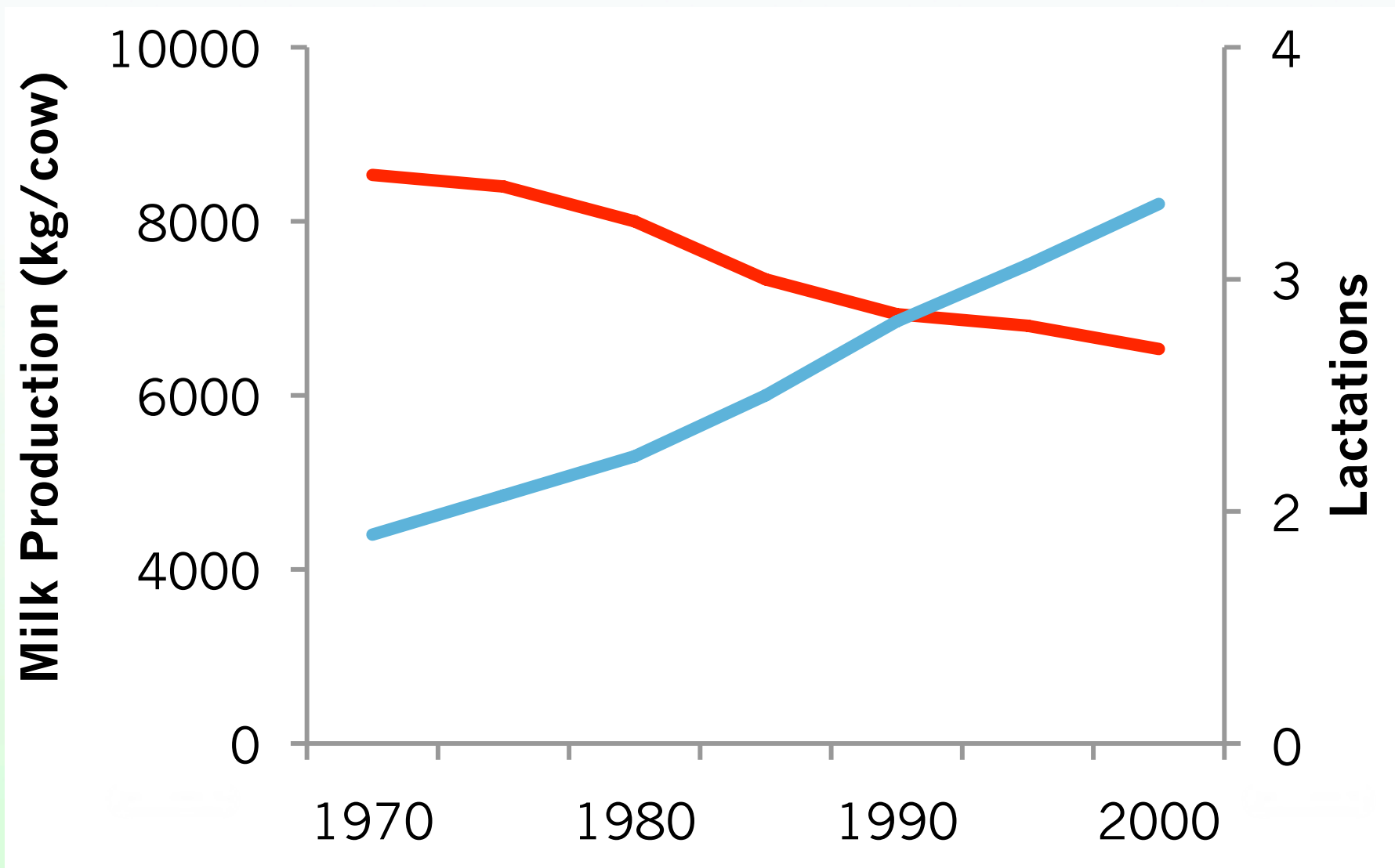
Challenge

Economics is typically the driving force in most production animal industries

Where has a focus on economics (milk production) placed the dairy cow industry?



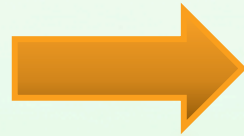
Adapted from Knaus (2009)



Adapted from Knaus (2009)

Focusing largely on milk production...

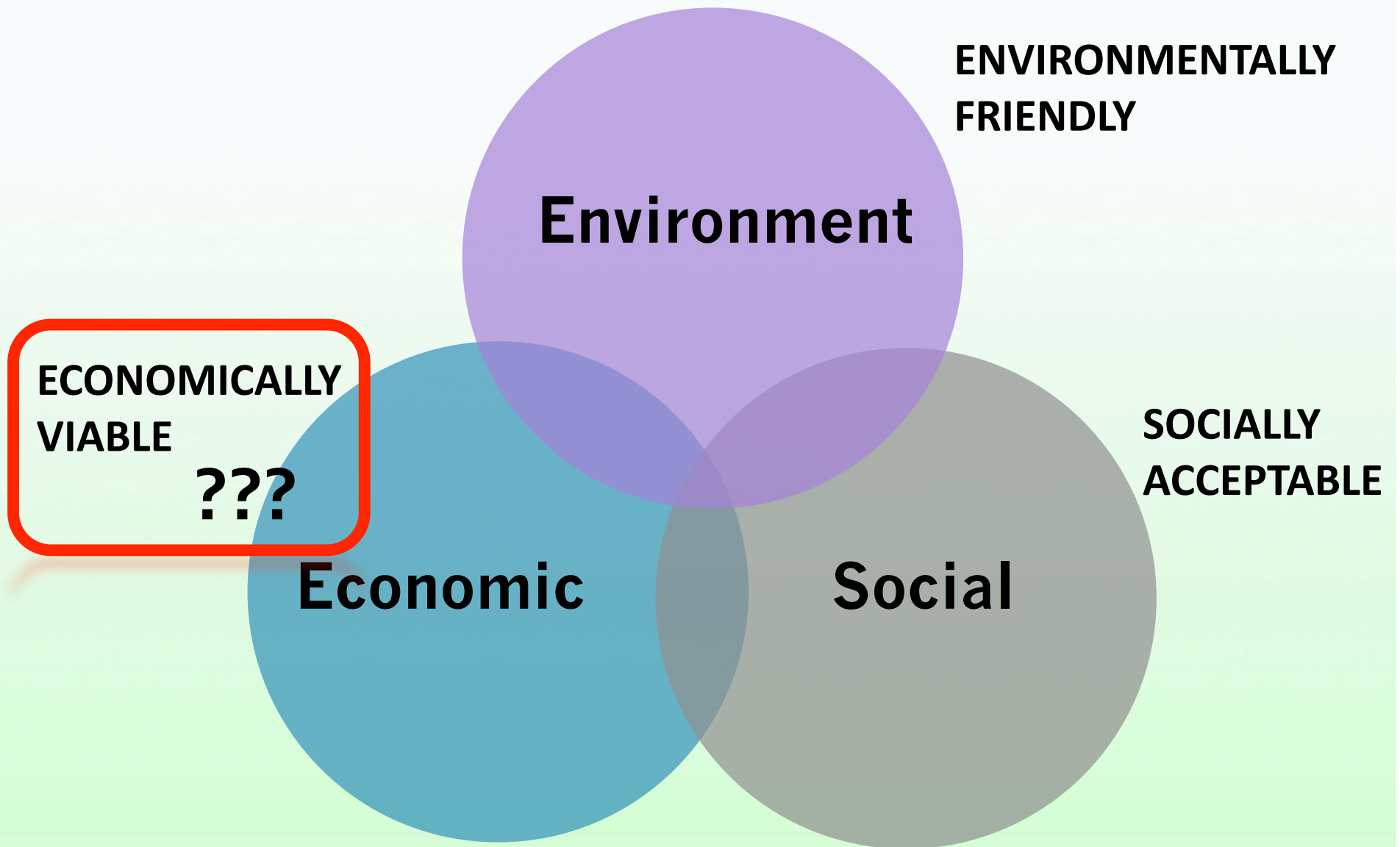
- ✓ Greatly increased production!
- ✗ Reduced longevity
- ✗ Reduced reproductive success
- ✗ Increased disease



High culling rates

(approx. 30% of herd culled each year in USA!)

Sustainability



Proposal: a partial shift in focus to maintain sustainability

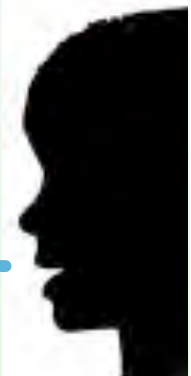
Shift: to include the entire animal into our thinking of what makes up a sustainable industry

HOW?

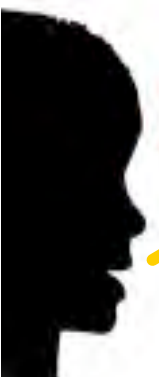
Animal welfare



Good welfare means high production and good health



Good welfare means the animal is feeling good and is free from fear and pain



Good welfare means the animal is living a reasonably natural life

Animal welfare

Good welfare means high production and good health



Good welfare means the animal is feeling good and is free from fear and pain



Good welfare means the animal is living a reasonably natural life

Animal welfare



**Health
Growth
Productivity**

Good welfare means the animal is feeling good and is free from fear and pain

Good welfare means the animal is living a reasonably natural life

Animal welfare



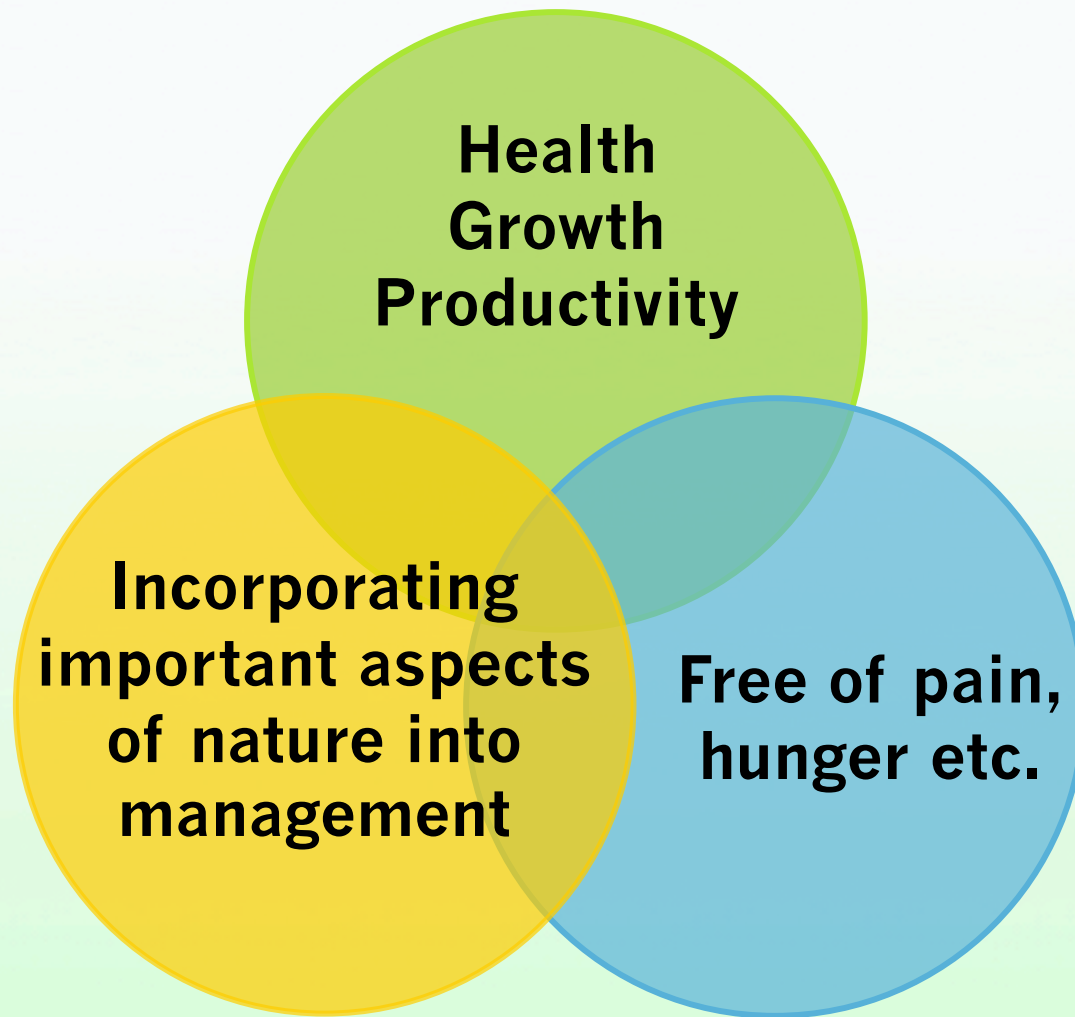
A Venn diagram consisting of two overlapping circles. The top circle is light green and contains the text 'Health', 'Growth', and 'Productivity'. The bottom circle is light blue and contains the text 'Free of pain, hunger etc.'. The intersection of the two circles is shaded with a darker green/blue. Below the circles is a yellow rounded rectangle containing the text 'Good welfare means the animal is living a reasonably natural life'.

**Health
Growth
Productivity**

**Free of pain,
hunger etc.**

Good welfare means the animal is living a
reasonably natural life

Animal welfare



Animal welfare



Considering all three concerns of quality of life of animals may not always be easy or practical – but it is growing in importance...

Sustainability

**ENVIRONMENTALLY
FRIENDLY**

Environment

**ECONOMICALLY
VIABLE**

Economic

**SOCIALLY
ACCEPTABLE**

Social

Sustainability

**ENVIRONMENTALLY
FRIENDLY**

Environment

**ECONOMICALLY
VIABLE**

Economic

**SOCIALLY
ACCEPTABLE**

Social

Opinions matter





“Some serious welfare problems for sows persist even in the best stall-housing system”

Scientific Committee of the European Union (1997)



“Some serious welfare problems for sows persist even in the best stall-housing system”

Scientific Committee of the European Union (1997)



“Both individual [meaning stalls] and group housing can meet the welfare requirements of pigs”

Scientific Committee Australia



...and “public perceptions may result in difficulties with the concept of confinement housing ... [but] ... the issue of public perception should not be confused with welfare.”

Scientific Committee Australia

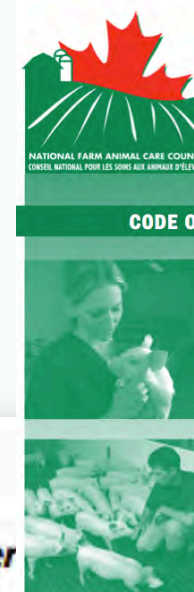


**Regardless of this idea
that public perception
does not matter –
changes are coming in
Canada**

...and “public perceptions may result in difficulties with the concept of confinement housing ... [but] ... the issue of public perception should not be confused with welfare.”

Scientific Committee Australia

Code of Practice for the Care and Handling of Pigs



CODE OF PRACTICE

FOR THE CARE AND HANDLING OF
PIGS

REQUIREMENTS

For all holdings newly built or rebuilt or brought into use for the first time after 2014, mated gilts and sows must be housed in groups. Individual stalls may be used for up to 28 days after the date of last breeding and an additional period of up to 7 days is permitted to manage grouping. Time in stalls can only be extended to protect the welfare of individual sows on the advice of a competent stockperson.

All new installations and replacements of existing individual stalls that occur after July 1, 2014, must be sized appropriately to allow sows to:

- *stand up at rest in a stall without simultaneously touching both sides of the stall*
- *lie down without their udders protruding into adjacent stalls*
- *stand up without touching the top bars*
- *stand in a stall without simultaneously touching both ends of the stall.*

As of July 1, 2024, mated gilts and sows must be housed:

- *in groups*; or*
- *in individual pens; or*

Code of Practice for the Care and Handling of Pigs



REQUIREMENTS

For all holdings newly built or rebuilt or brought into use for the first time after 2014...

***For all holdings newly built or rebuilt...
after July 1, 2014, mated gilts and sows
must be housed in groups...***

As of July 1, 2024, mated gilts and sows must be housed:

- *in groups*; or*
- *in individual pens; or*

**How do we research
“opinions” and
“animal welfare”?**

Surveyed:

Producers

Veterinarians

Public

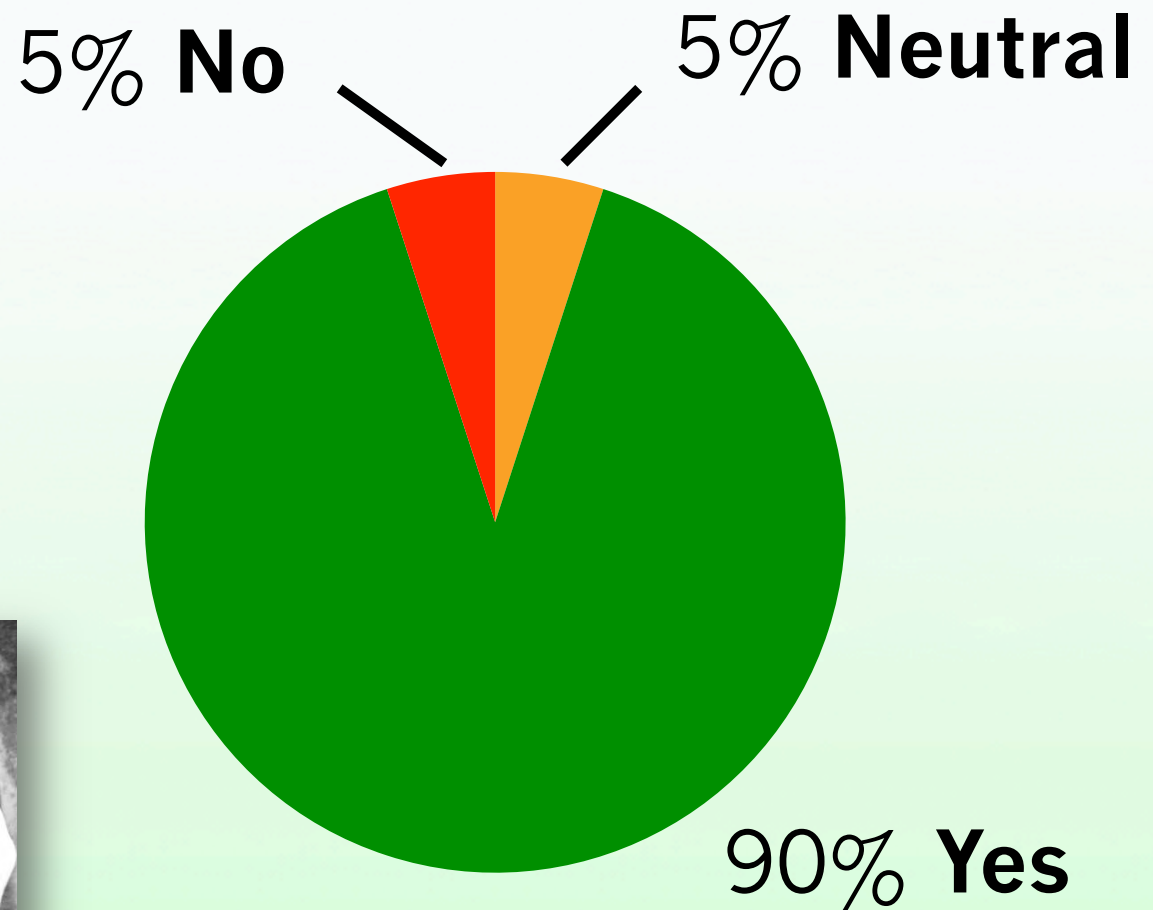
Researchers



*“Should we
provide pain
control when
disbudding
and
dehorning
dairy calves?”*



*“Should we
provide pain
control when
disbudding
and
dehorning
dairy calves?”*



Robbins et al. (in review)

“Should we provide pain control when disbudding and dehorning dairy calves?”

YES,
because...

“dehorning is painful and anesthesia for young dairy calves is simple, inexpensive, and effective”

“because we should try to alleviate pain in animals whenever possible”



Robbins et al. (in review)

“Should we provide pain control when disbudding and dehorning dairy calves?”

NO,
because...

“the pain is temporary and administration of pain medications means more time the animal is restrained and under stress. It also represents a greater cost burden to the producer”



Robbins et al. (in review)

“Should we provide pain control when disbudding and dehorning dairy calves?”

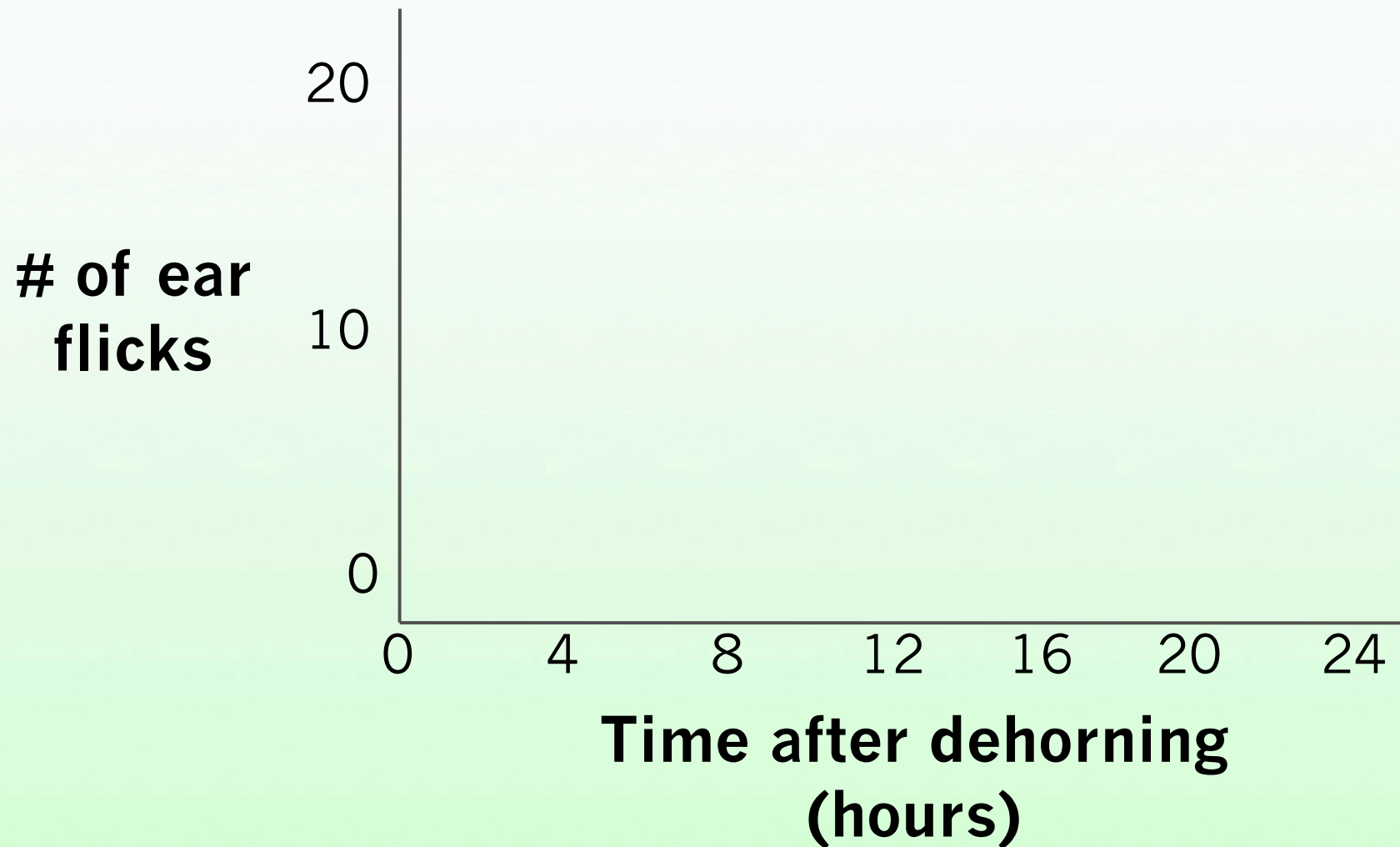
NO,
because...

“the pain is temporary and administration of pain medications means more time the animal is restrained and under stress. It also represents a greater cost burden to the producer”



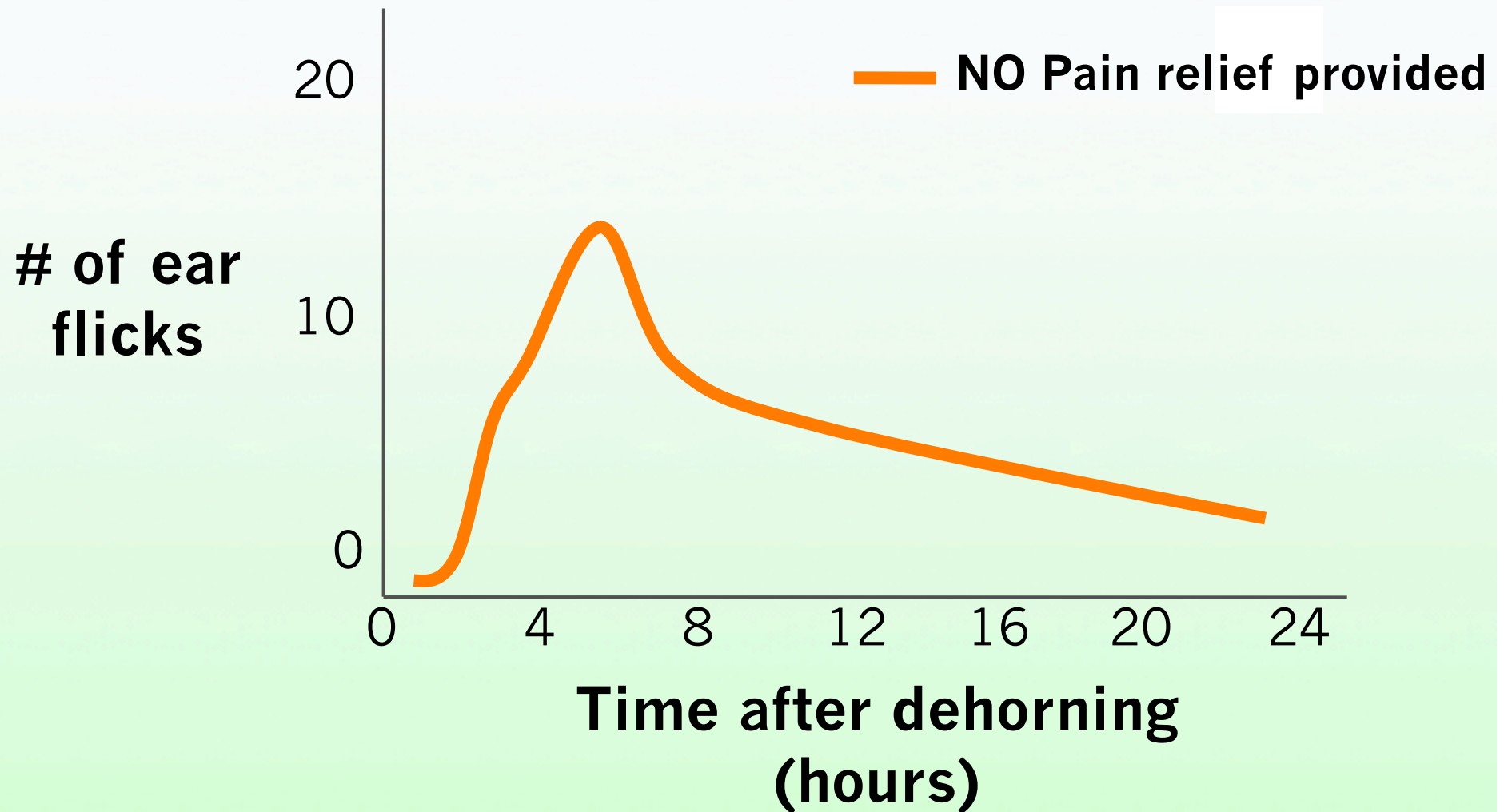
Robbins et al. (in review)

Is the pain brief?



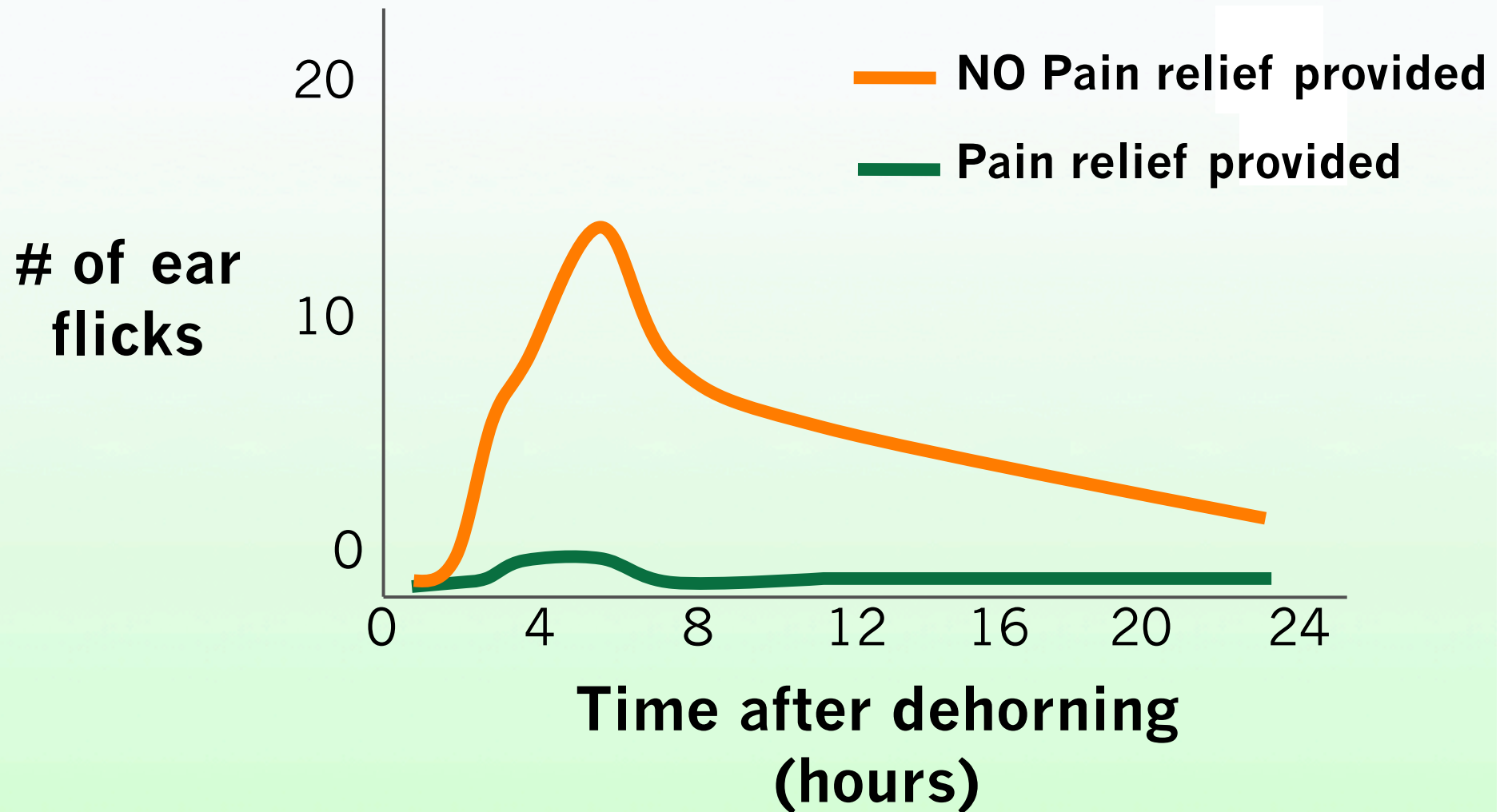
Faulkner & Weary (2000)

Pain response up to 1 day after dehorning without pain mitigation



Faulkner & Weary (2000)

Pain response up to 1 day after dehorning without pain mitigation



Faulkner & Weary (2000)

**Does the pain matter to
the calf?**



“Cognitive Bias”

Positive



“Cognitive Bias”

Positive



Negative

Or vice versa

A video frame showing a black and white cow in a stall. The cow is lying down, and its head is visible in the lower left. A metal bucket is hanging from the stall door on the right. The floor is covered with straw bedding. An orange rectangular box is overlaid on the center of the image, containing the text "Video example".

Video example

What does the calf do when shown unknown colours?

Positive



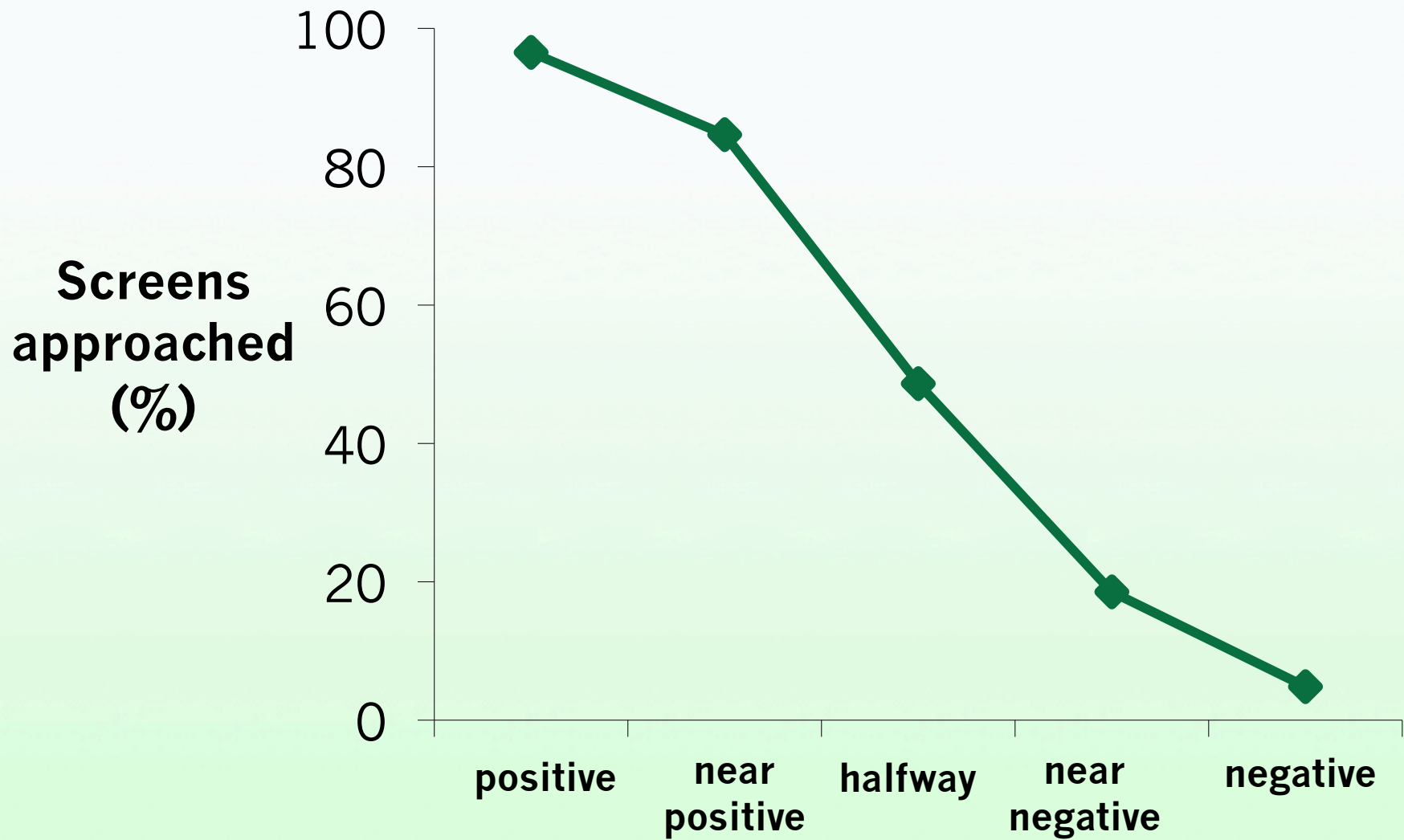
Negative

AMBIGUOUS

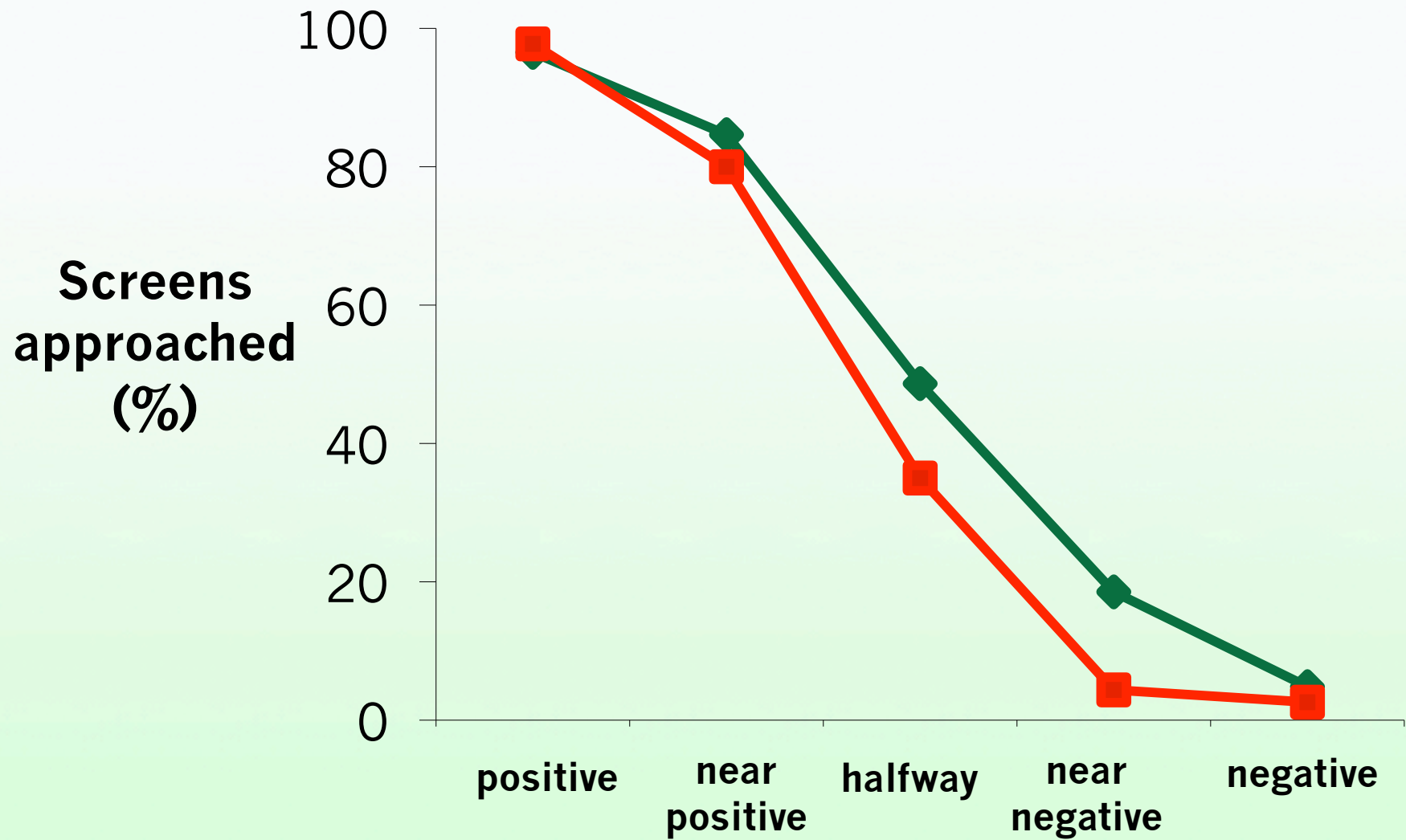
AMBIGUOUS

AMBIGUOUS

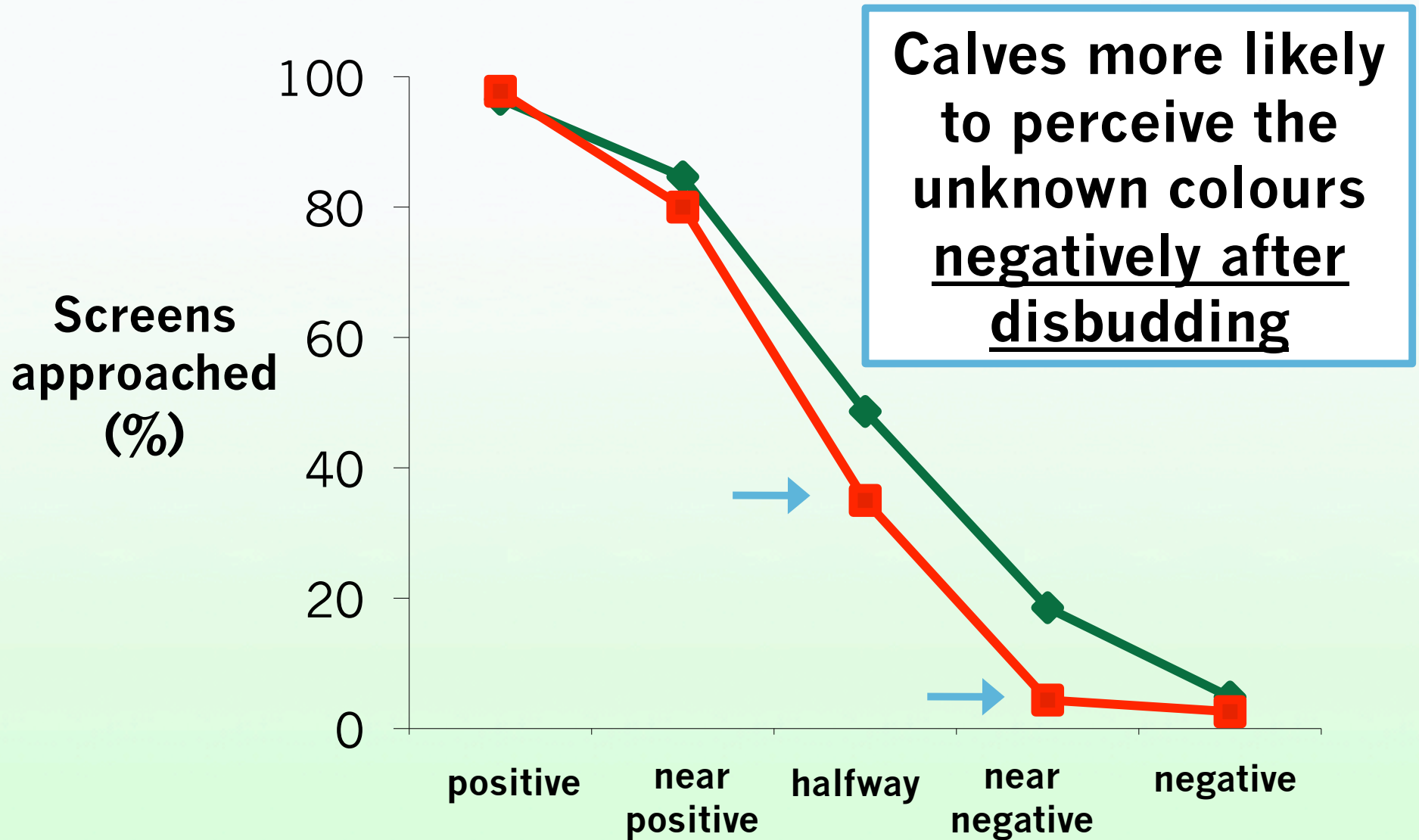
Before disbudding



After disbudding



After disbudding



Is pain control a financial burden?

Lidocaine for disbudding $\approx 0.46\$/\text{calf}$

Multi-modal pain management* $\approx 4\$/\text{calf}$

Cost of multi-modal pain control in relation to the total cost of rearing a replacement heifer $\approx 0.2\%$

**Lidocaine, meloxicam and xylazine*

Code of Practice for the Care and Handling of Dairy Cattle

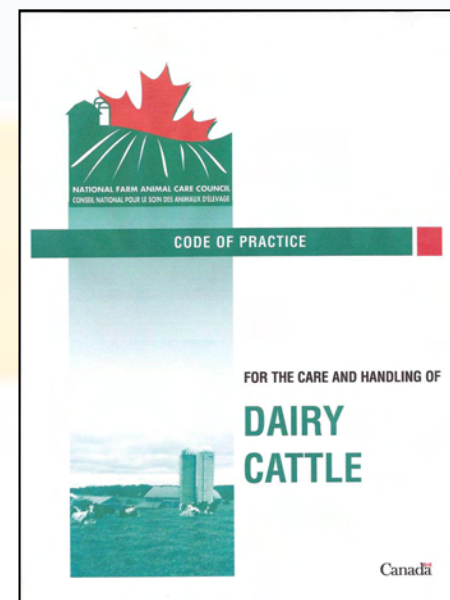
REQUIREMENTS

Pain control must be used when dehorning or disbudding.

Bleeding control must be used when dehorning.

RECOMMENDED BEST PRACTICES

- disbud calves before three weeks of age
- adequately restrain the calf
- use a method that is appropriate for the size of horn and/or age of animal
- ensure only trained persons carry out disbudding/dehorning procedures
- use a combination of sedatives, local anesthetics and analgesics
- isolate calves following the use of caustic paste (to avoid accidental caustic burns to other animals)



Code of Practice for the Care and Handling of Dairy Cattle

REQUIREMENTS

Pain control must be used when dehorning or disbudding.

Bleeding control must be used when dehorning.

Pain control must be used when dehorning and disbudding.

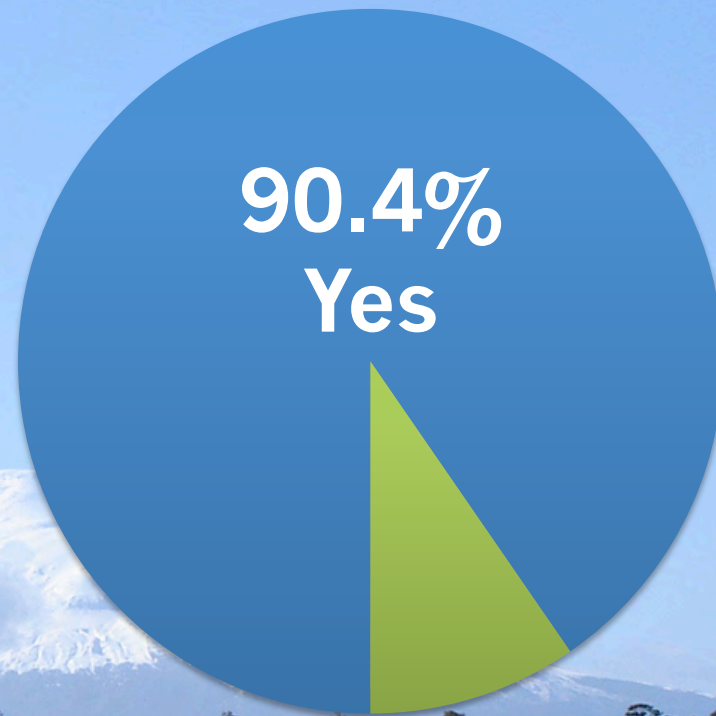
RECOMMENDED BEST PRACTICES

- disbud calves before three weeks of age
- adequately restrain the calf
- use a method that is appropriate for the size of horn and/or age of animal
- ensure only trained persons carry out disbudding/dehorning procedures
- use a combination of sedatives, local anesthetics and analgesics
- isolate calves following the use of caustic paste (to avoid accidental caustic burns to other animals)





“Should dairy cows be provided access to pasture?”



9.6%
Neutral

0%
No

Pasture access

YES,
because...

“The time on pasture allows the cows to participate in their normal grazing behavior, and can help reduce the incidence of hoof problems such as lameness and sole ulcers if the pastures are kept in good condition.”



Pasture access

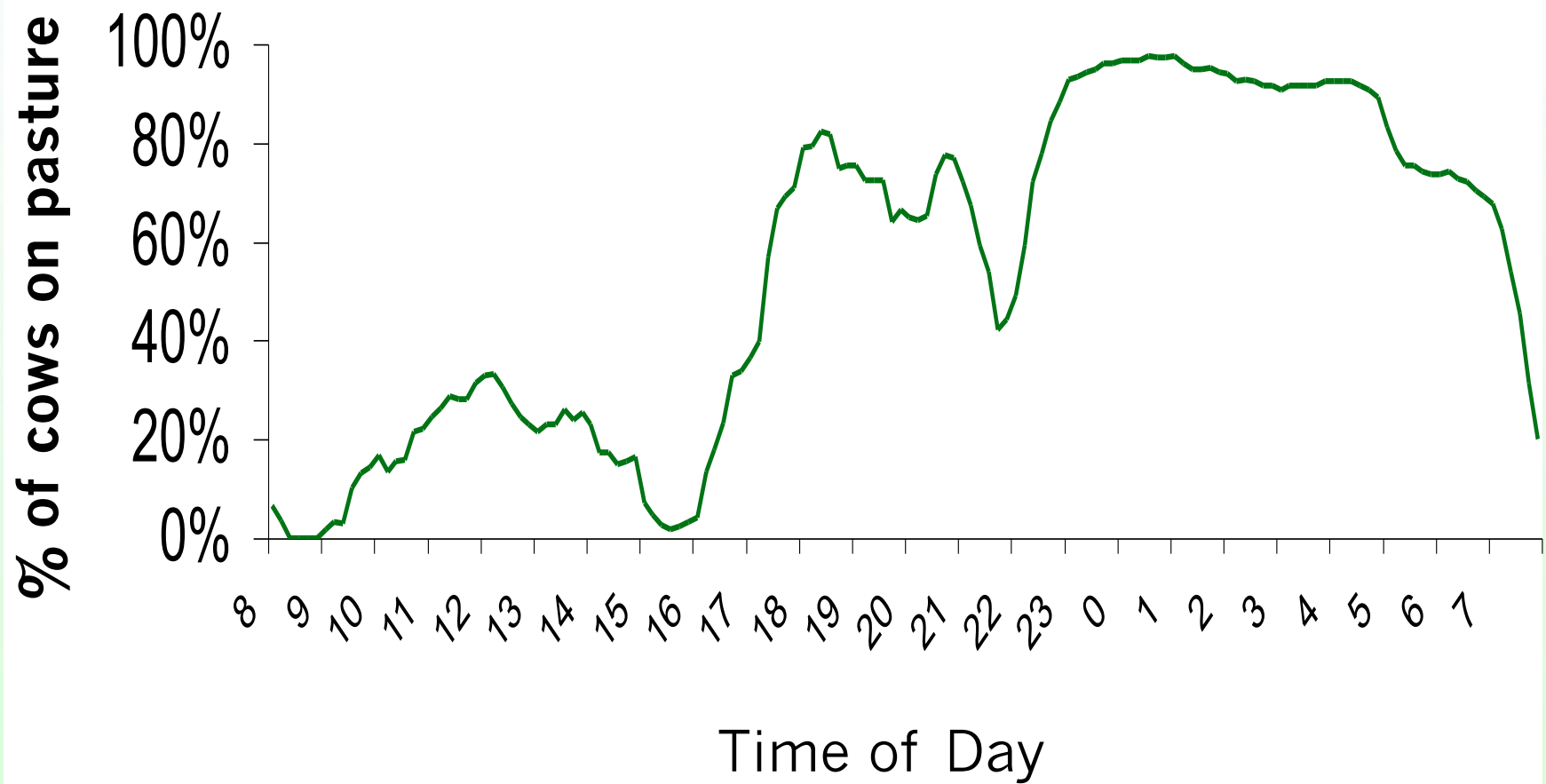
NEUTRAL,
because...

“Cows grazing on pasture makes a great picture and is the cow's natural environment, however even the highest quality pasture cannot provide the cow with enough energy to meet her requirements for lactation.”



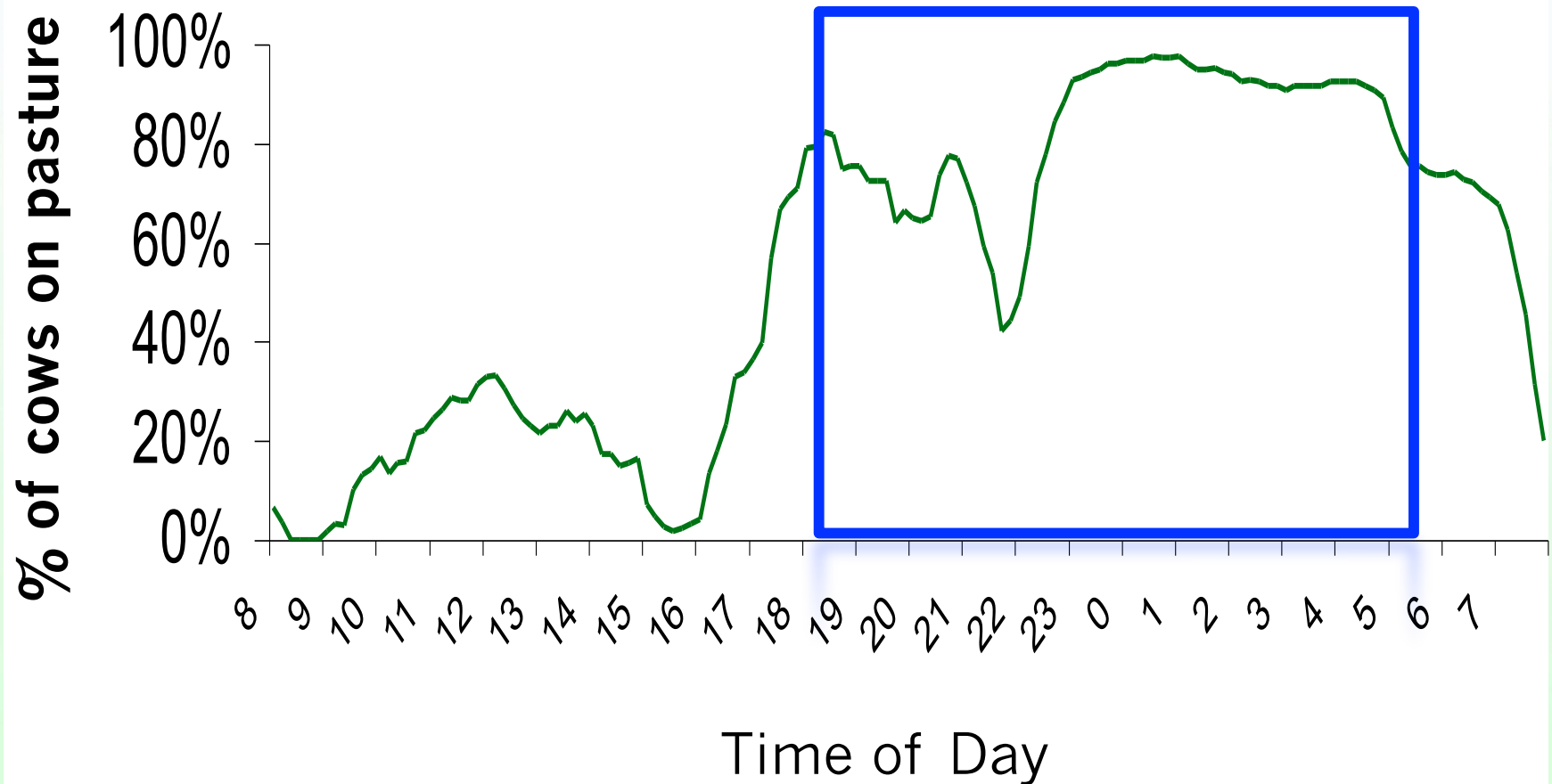
Can we provide partial access to pasture?

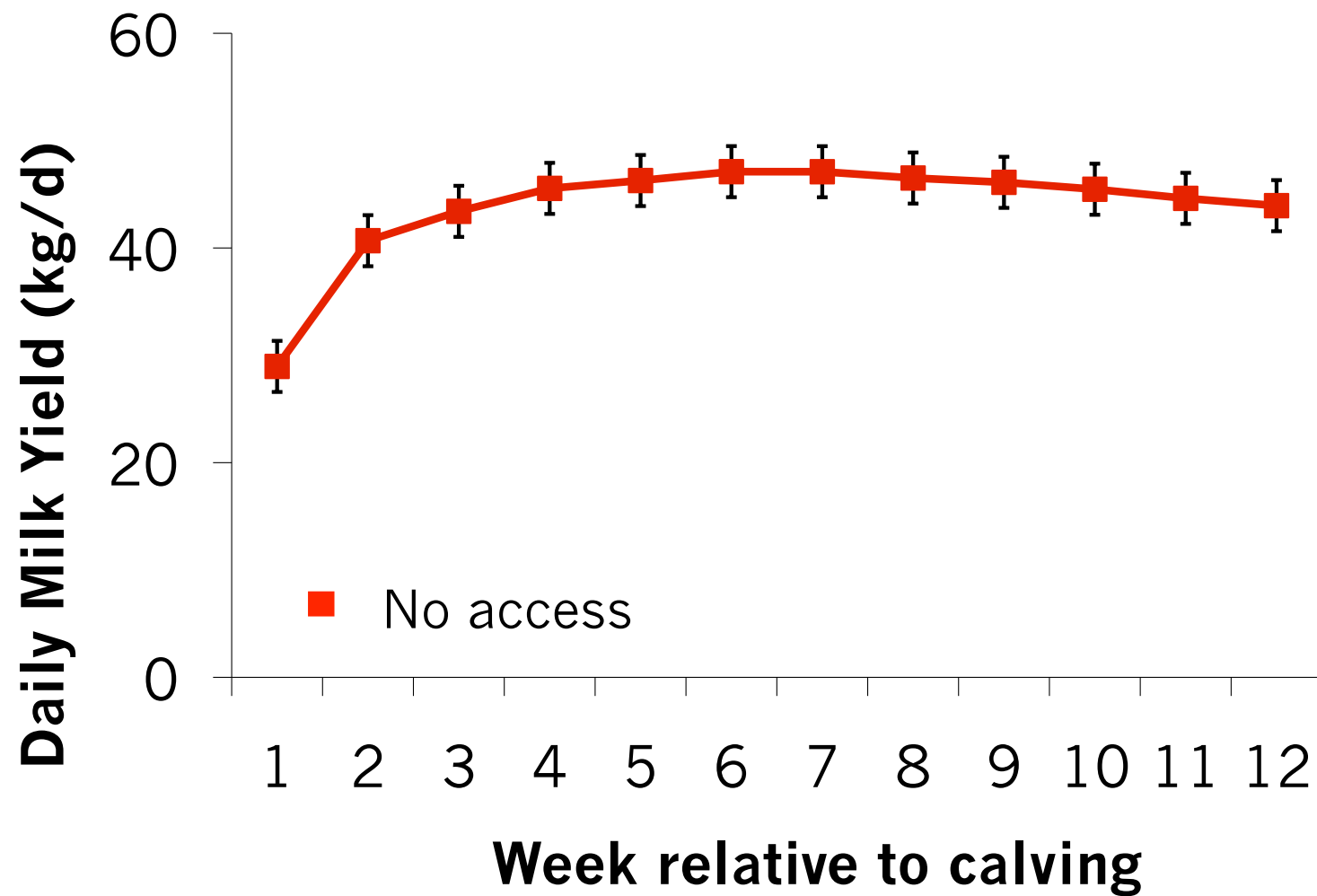




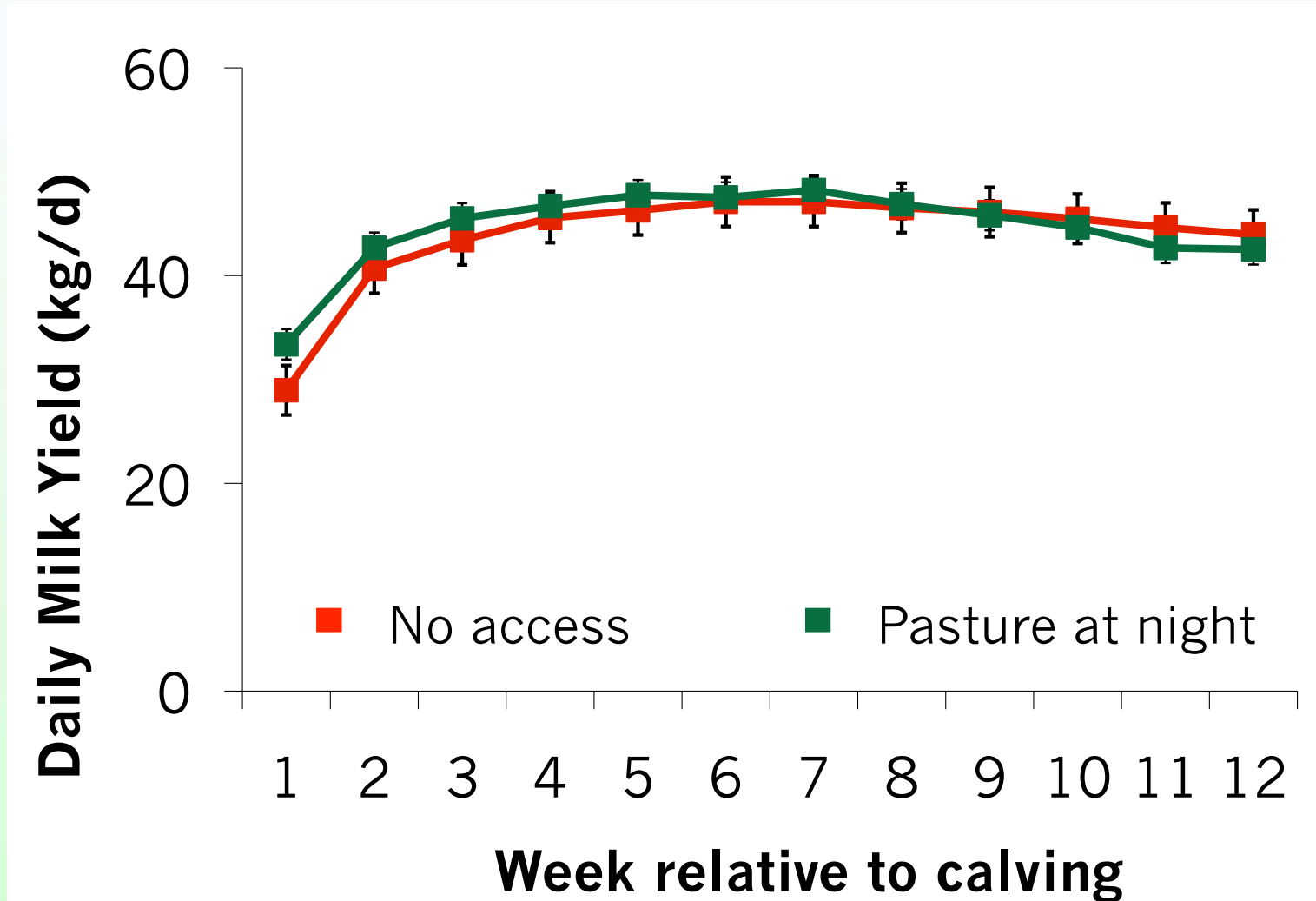
Legrand et al. (2009)

Cows spent time on pasture mainly at night

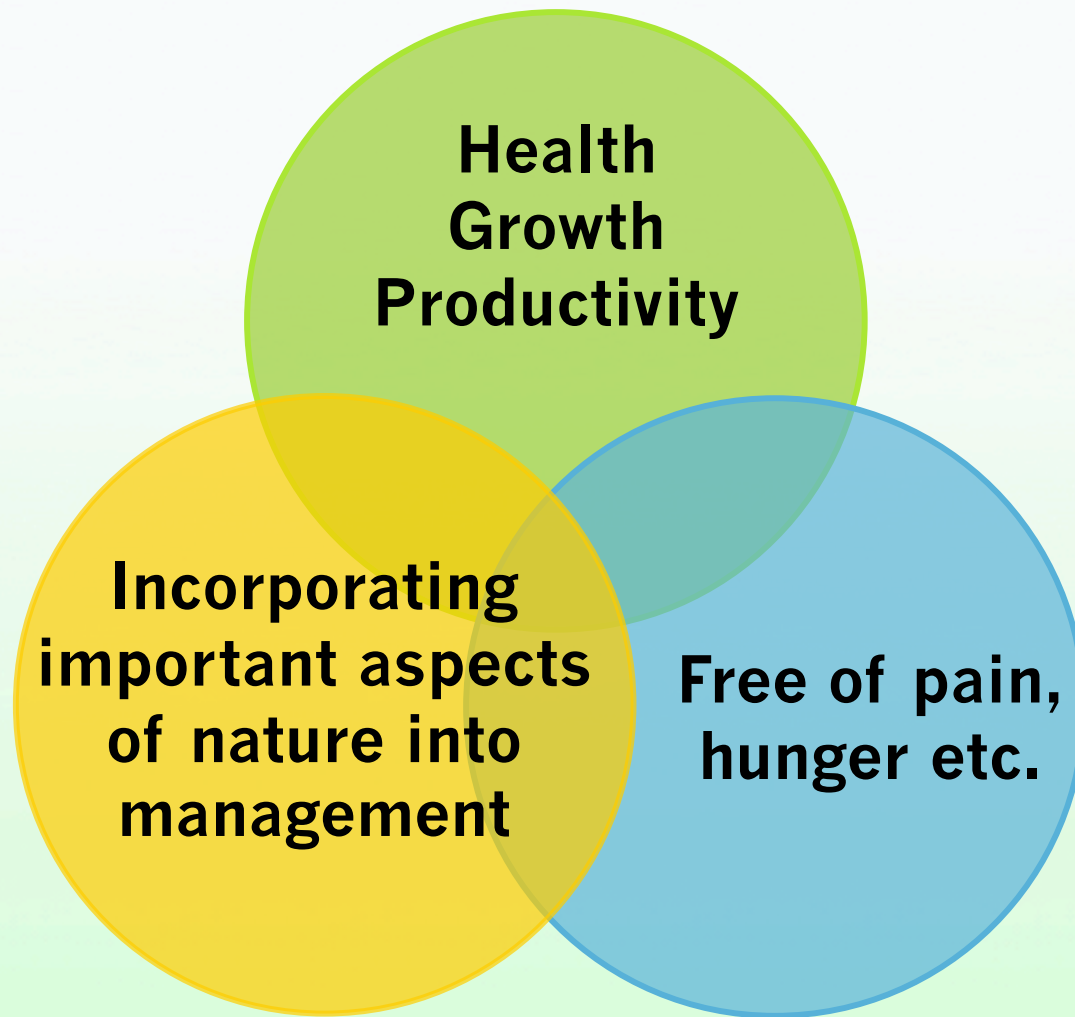




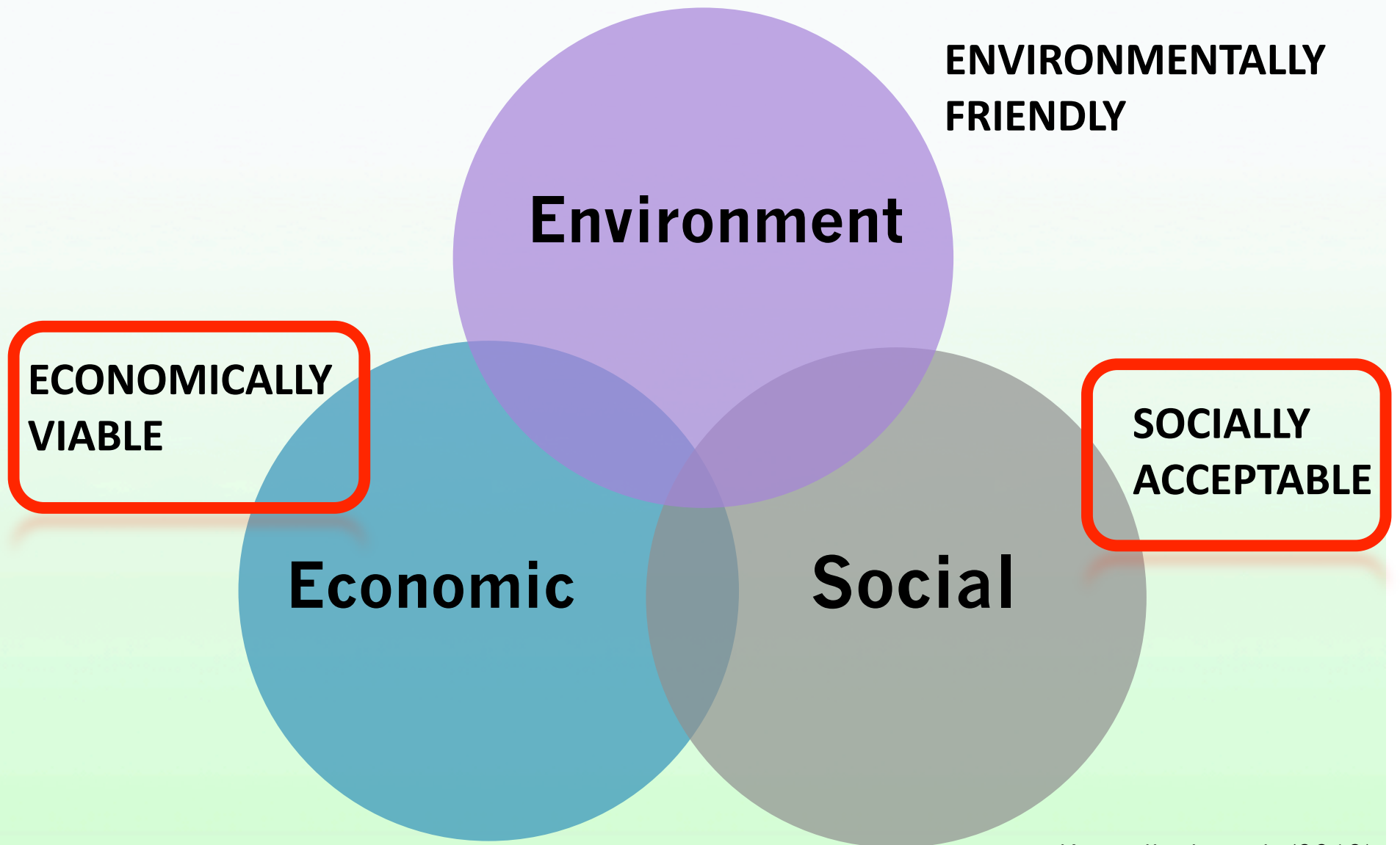
Partial access to pasture did not impact milk production



Animal welfare



Sustainability



von Keyserlingk et al. (2013)

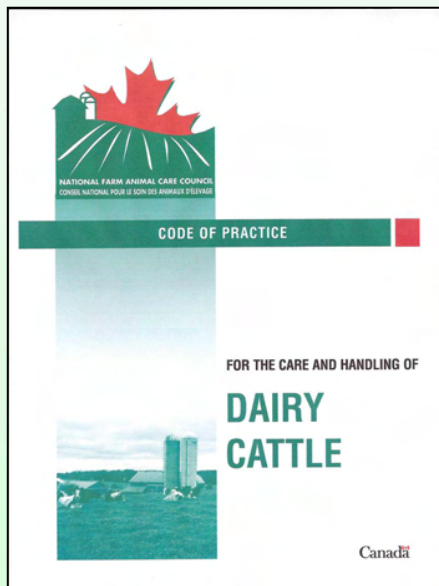
**In the dairy goat
industry - what
potential future
challenges should be
addressed by research?**

Examples

- 1. Kid care and management**
- 2. Lameness and hoof care**

Dehorning

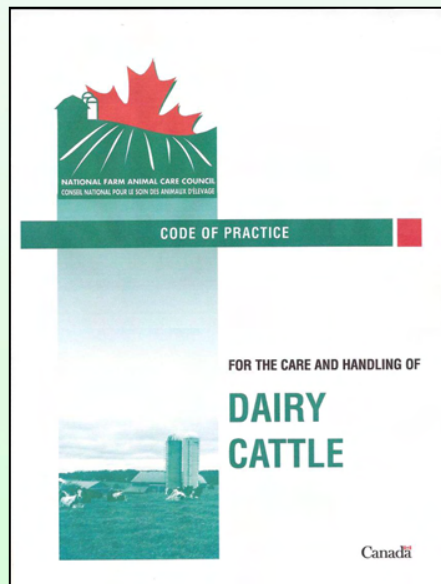
Negative effects, including prolonged pain



Calves:
pain
mitigation
is a must

Dehorning

Negative effects, including prolonged pain



Calves:
pain
mitigation
is a must

Options for kids?



Dehorning

Current code of practice – makes no mention of dehorning being a painful procedure...



Promoting good kid health



Passive transfer of immunity

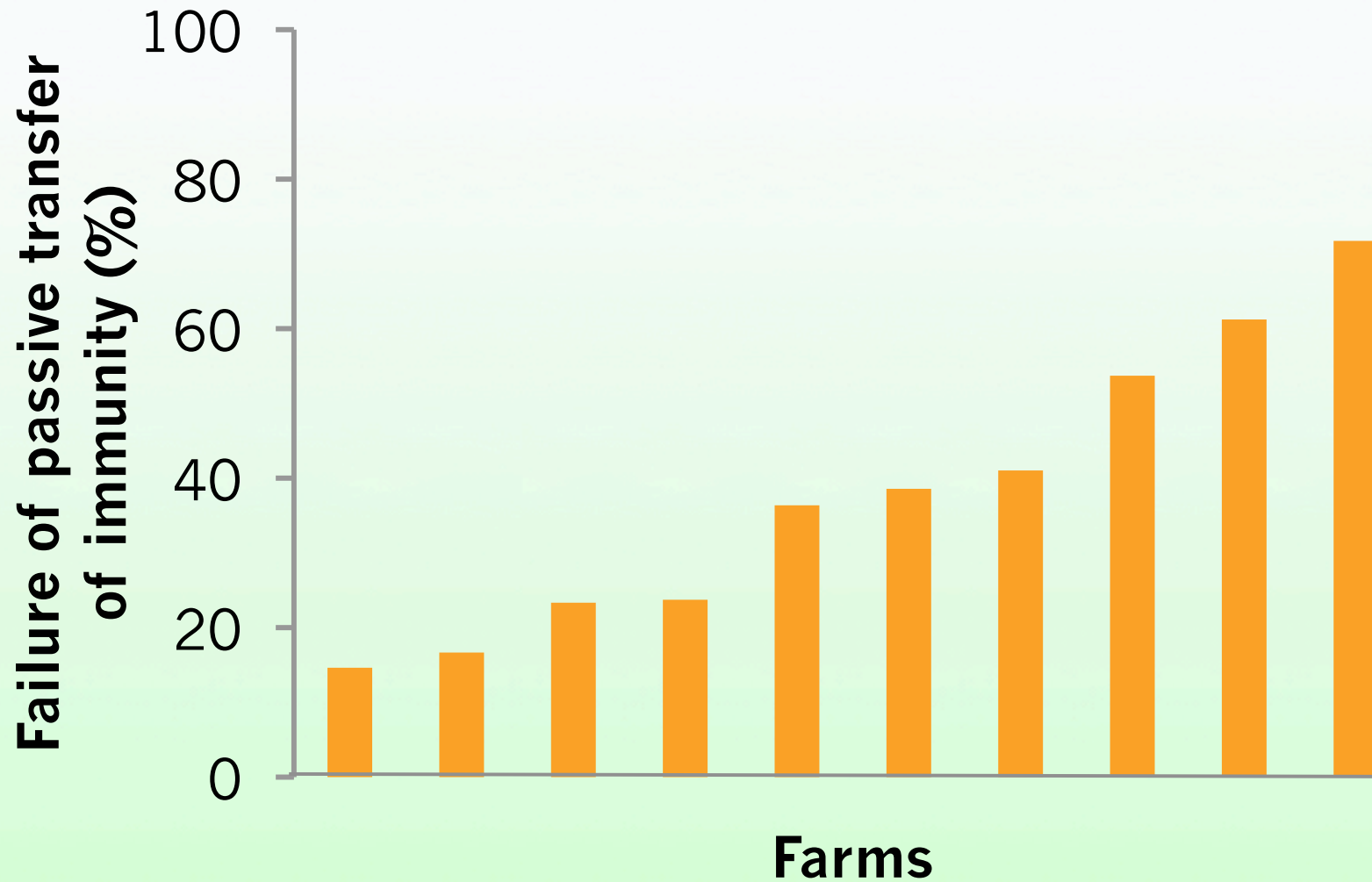


Passive transfer of immunity



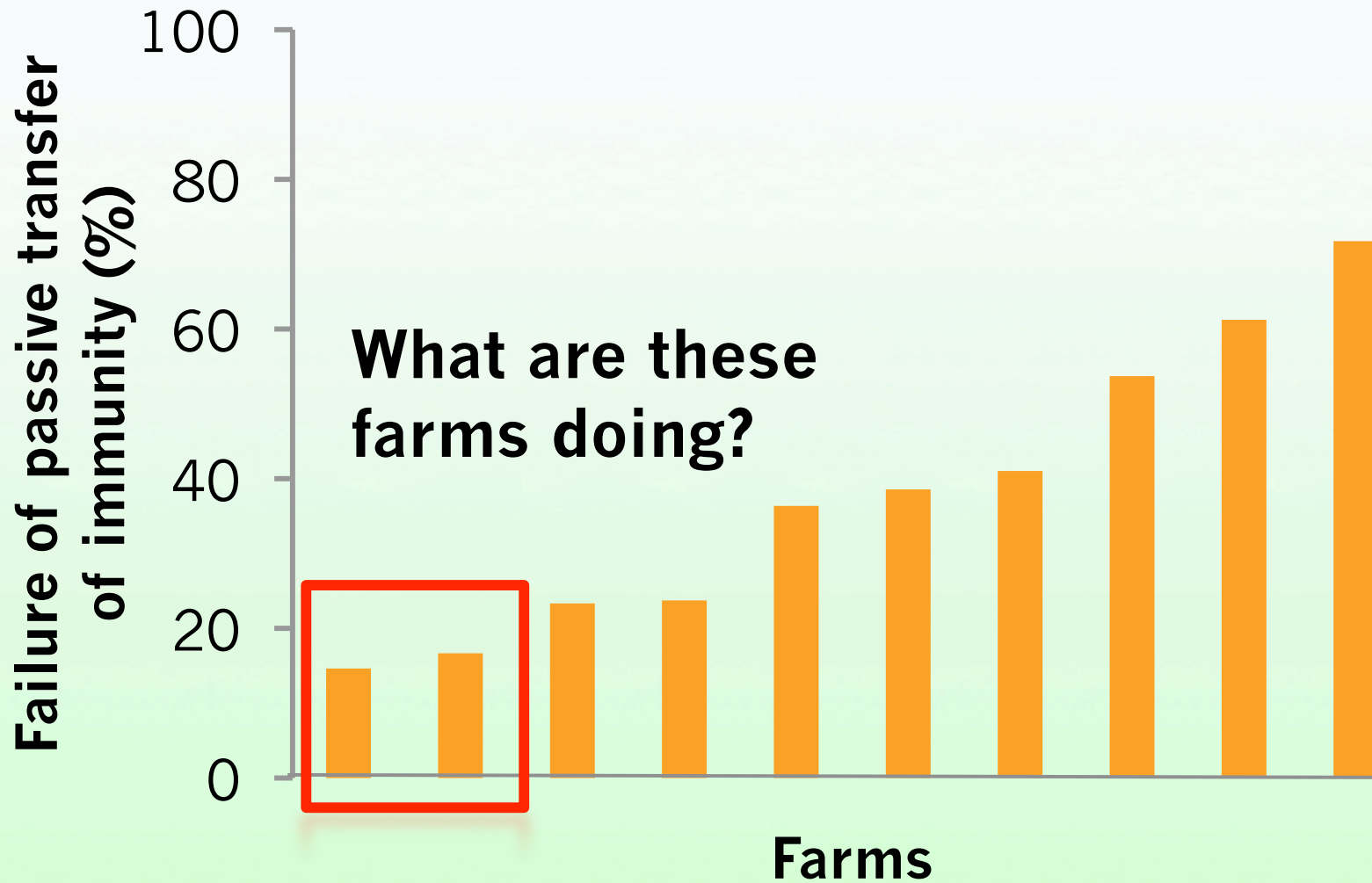
Immunoglobulin G (IgG) levels in blood serum = indicator of successful colostrum feeding

Passive transfer of immunity

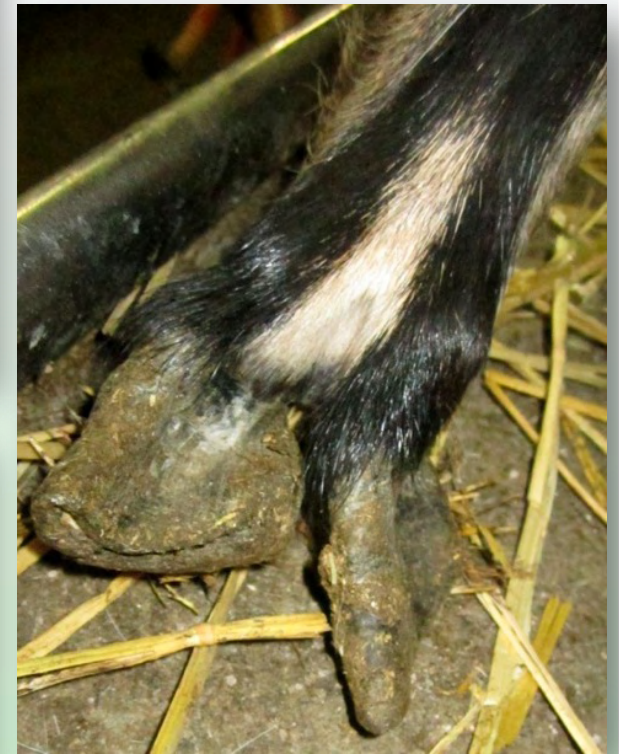


Zobel et al. (in prep)

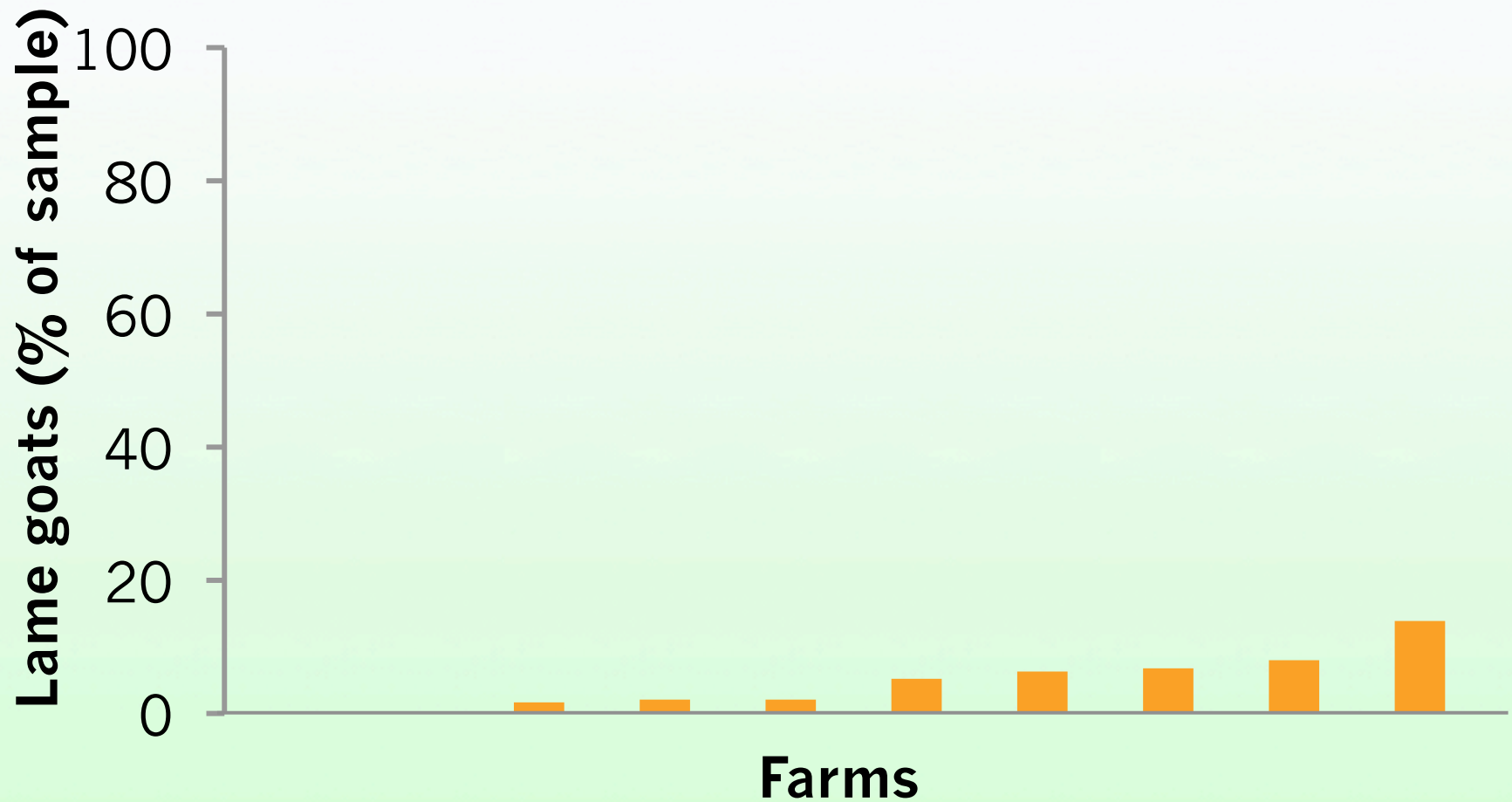
Promoting good kid health



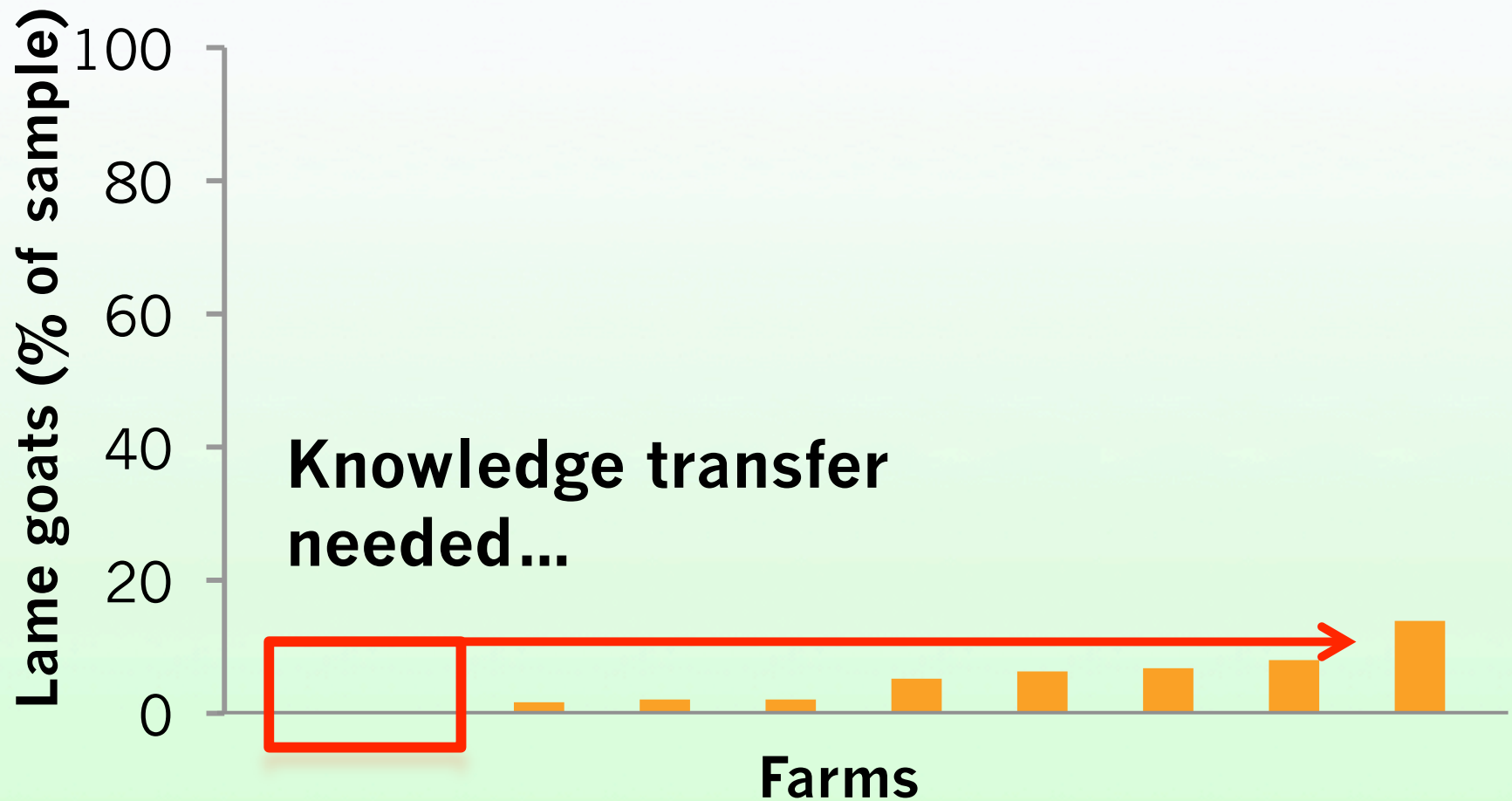
Hoof care and lameness prevention



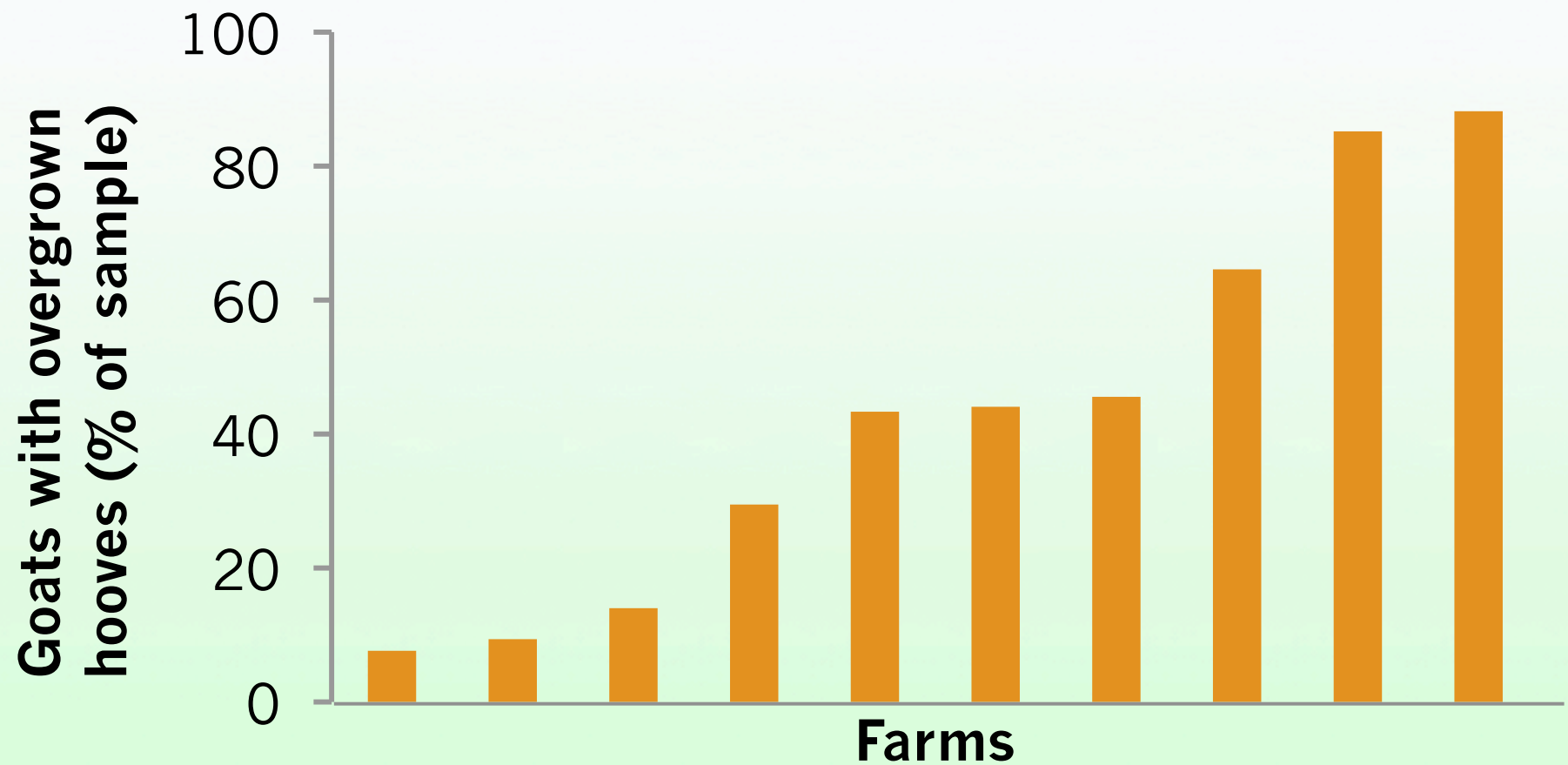
Lameness



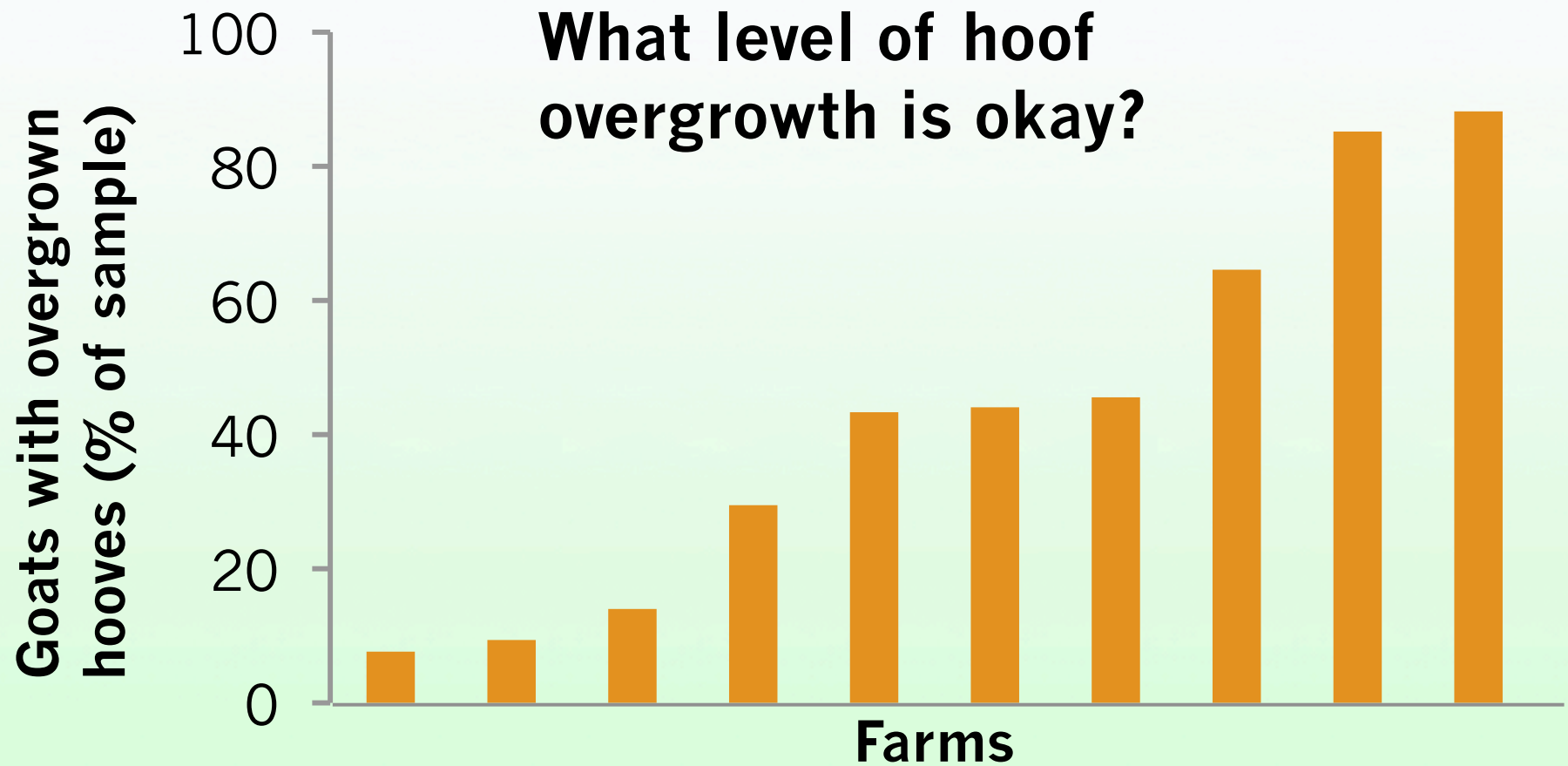
Lameness prevention



Hoof overgrowth



Improving hoof care...



Wrapping up

The growing dairy goat industry is in a **unique position to learn** from other industries' challenges



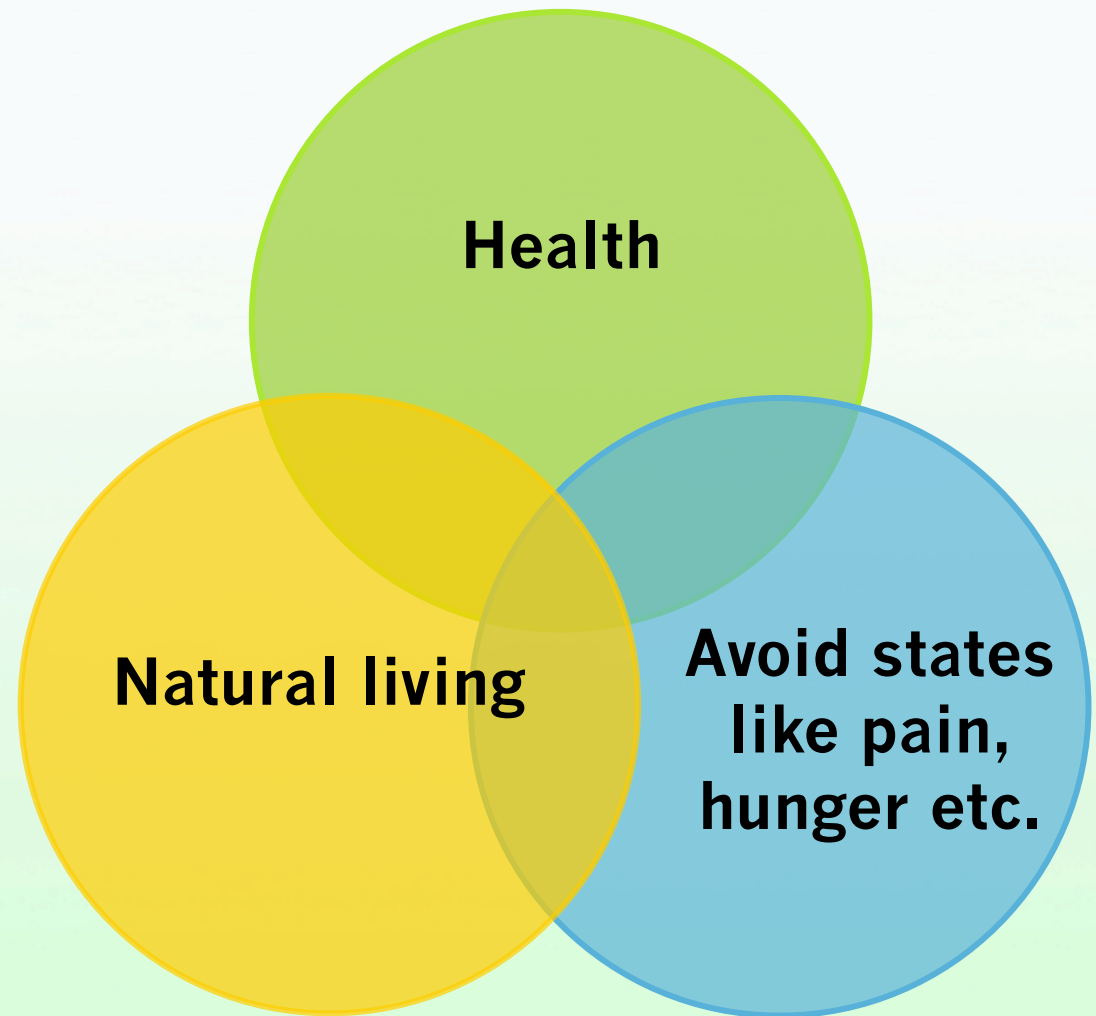
Wrapping up

Research can help identify improvements to challenges **before they are more engrained in management**



Wrapping up

Important to incorporate **all three concepts of animal welfare** (not just good health and productivity) into research



Wrapping up

Research is often driven by **expressed need...**

....this includes public perception, as much as it does producer requests!

Acknowledgements

Dr. Nina von Keyerslingk

Dr. Dan Weary

Dr. Ken Leslie

Ontario's goat producers!



animal welfare
program



Ontario Veterinary College
POPULATION MEDICINE



Mark Wynands
(research assistant)