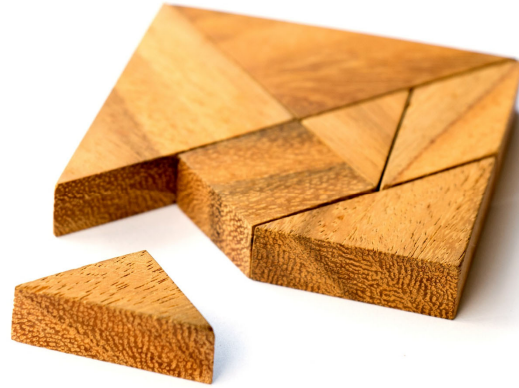


Farm animal welfare: A key piece of the agriculture sustainability puzzle

Jennifer Van Os
Assistant Professor
Extension Specialist in Animal Welfare



*VVMA Winter CE Conference
Saturday, February 3, 2024*



Department of
Animal & Dairy Sciences
UNIVERSITY OF WISCONSIN-MADISON

Outline

1. What do we mean by animal welfare?
2. The role of animal welfare in the dairy industry
3. Animal welfare quality assurance in the US industry
4. Scientific study of animal welfare
 - A. Biological science
 - B. Social science

Animal welfare – what comes to mind for you?

well-being science
 animal research welfare
 advocate activist comfort
 responsible
 humane ethical protection
 care husbandry
 stewardship
 rights
 management

What is animal welfare?



dairy farmers

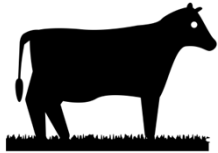
**provide
 animal care**



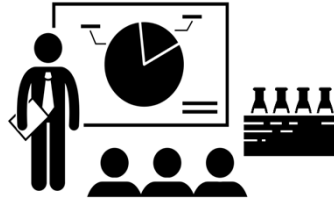
dairy cattle

**experience
 animal welfare**

Who is invested in animal welfare?



the animals



dairy organizations
and supply chain



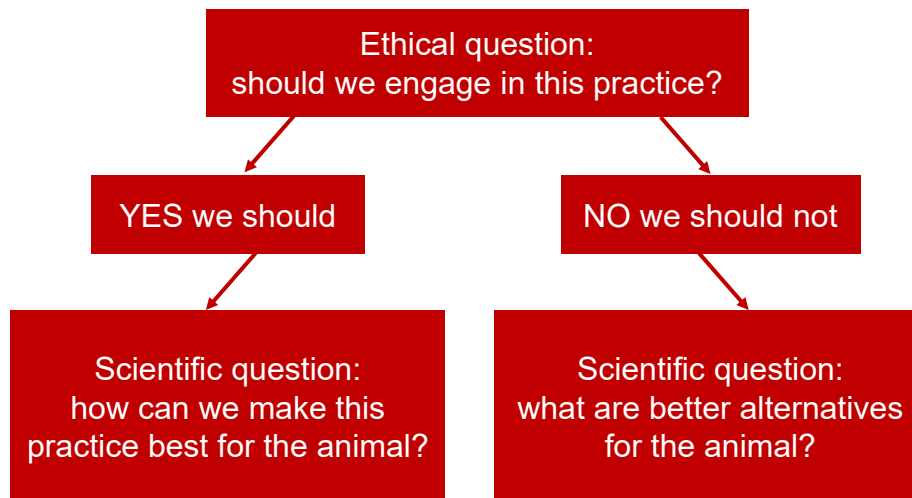
farmers and industry



the public
(consumers, voters)

Icons from the Noun Project

Animal welfare: an ethical concept where science can help inform solutions



Ethics self-poll

What is your personal view on toxicology tests on animals?

- A. I can accept testing substances on animals so we know they are safe for humans
- B. I can accept animal testing for important medicines if it's the only way to get the results, and the animal's pain and suffering is minimized
- C. I can accept testing on mice or rats, but not on dogs
- D. I can accept testing on animals that have been specifically bred and raised for that purpose
- E. I cannot accept it. Such studies should be banned

Adapted from Animal Ethics Dilemma (www.aedilemma.net; Hanlon et al., 2007. *Animal Welfare* 16:155-158. <https://doi.org/10.1017/S0962728600031870>).

Ethics self-poll

What is your personal view on toxicology tests on animals?

- A. I can accept testing substances on animals so we know they are safe for humans

Contractarian view: Animals cannot enter into mutual, contractual agreements (including for moral behavior). We have, at most, indirect ethical obligations to them.

Adapted from Animal Ethics Dilemma (www.aedilemma.net; Hanlon et al., 2007. *Animal Welfare* 16:155-158. <https://doi.org/10.1017/S0962728600031870>).

Ethics self-poll

What is your personal view on toxicology tests on animals?

- A. I can accept testing substances on animals so we know they are safe for humans

Contractarian view: Animals cannot enter into mutual, contractual agreements (including for moral behavior). We have, at most, indirect ethical obligations to them. (E.g., we should avoid using certain species like dogs, cats, or monkeys for research because most of the public would object – people will experience negative effects).

Ethics self-poll

What do you think about toxicology tests on animals?

- B. I can accept animal testing for important medicines if it's the only way to get the results, and the animal's pain and suffering is minimized

Utilitarian view: We have direct ethical obligations toward animals. We should maximize benefits vs. costs for both people and animals. (The end justifies the means).

Adapted from *Animal Ethics Dilemma* (www.ethicsdilemma.net); Hanlon et al., 2007. *Animal Welfare* 16:155-158. <https://doi.org/10.1017/S0960338606001870>.

Ethics self-poll

What do you think about toxicology tests on animals?

C. I can accept testing on mice or rats, but not on dogs

Relational view: We have direct ethical obligations toward animals, based on our relationships with the animals.

Adapted from Animal Ethics Dilemma (www.ethicsdilemma.net); Hanlon et al., 2007. *Animal Welfare* 16:155-158. <https://doi.org/10.1017/S0960323207003157>).

Ethics self-poll

What do you think about toxicology tests on animals?

D. I can accept testing on animals that have been specifically bred and raised for that purpose

Respect for Nature view: We have direct ethical obligations toward animals. We should protect the integrity of a species.

Adapted from Animal Ethics Dilemma (www.ethicsdilemma.net); Hanlon et al., 2007. *Animal Welfare* 16:155-158. <https://doi.org/10.1017/S0960323207003157>).

Ethics self-poll

What do you think about toxicology tests on animals?

E. I cannot accept it. Such studies should be banned.

Animal Rights view (Deontology): We have direct ethical obligations toward animals. It is never justifiable to sacrifice the interests of an animal to benefit another animal or human. (The end does not justify the means).

Adapted from Animal Ethics Dilemma (www.animalrights.org; Hanlon et al., 2007. *Animal Welfare* 16:155-158. <https://doi.org/10.1017/S0962729807001157>).

Ethical perspectives

Willing to accept
use of animals for
human purposes

- A. Contractarian
- B. Utilitarian
- C. Relational
- D. Respect for Nature
- E. Animal Rights

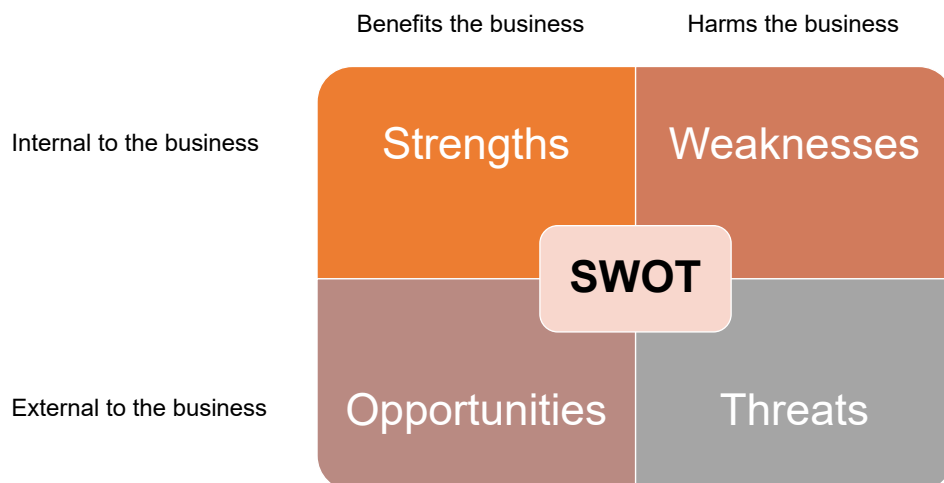
Believe we have
direct ethical
obligations to
animals*

(*at least some animals)

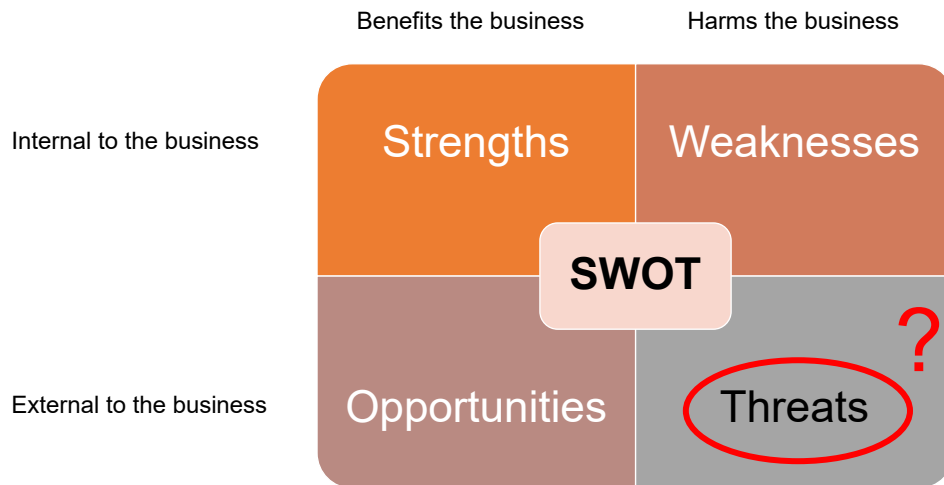
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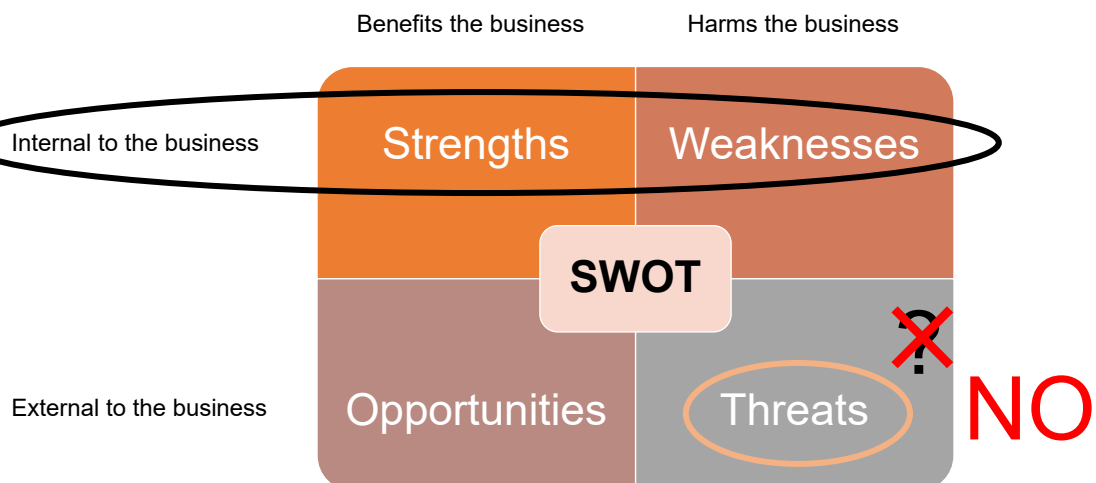
The role of animal welfare on dairy farms

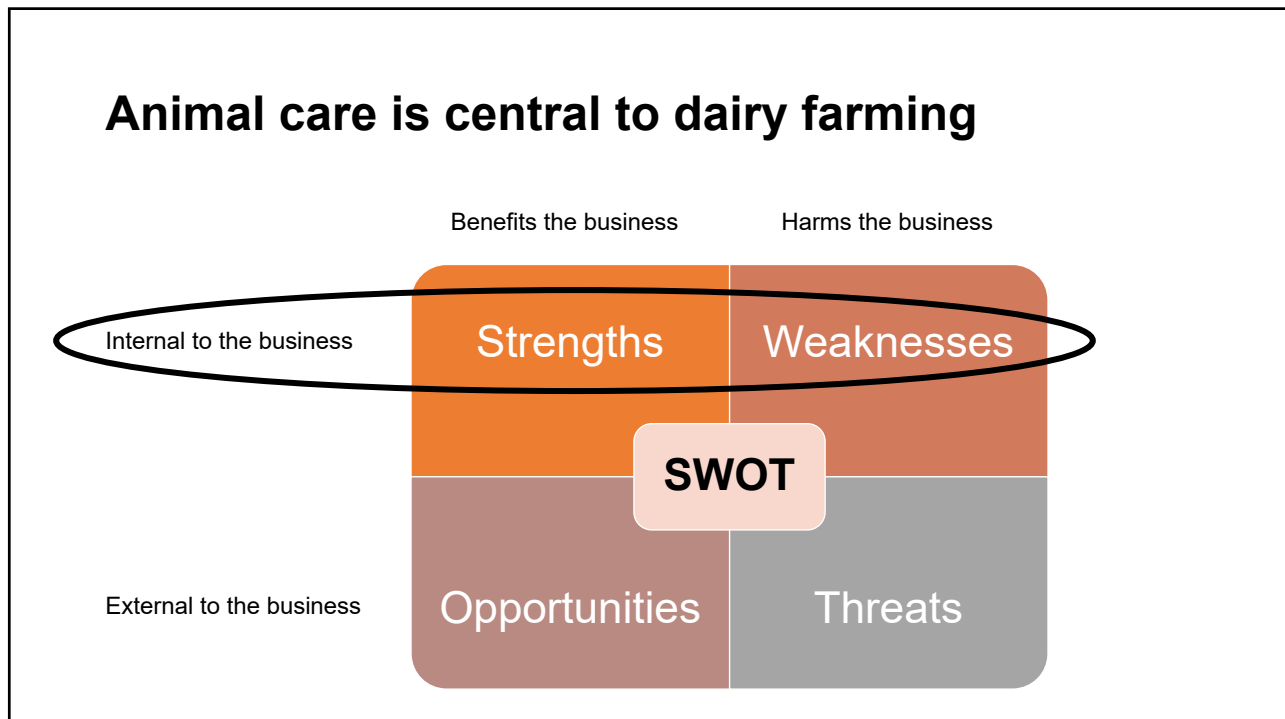
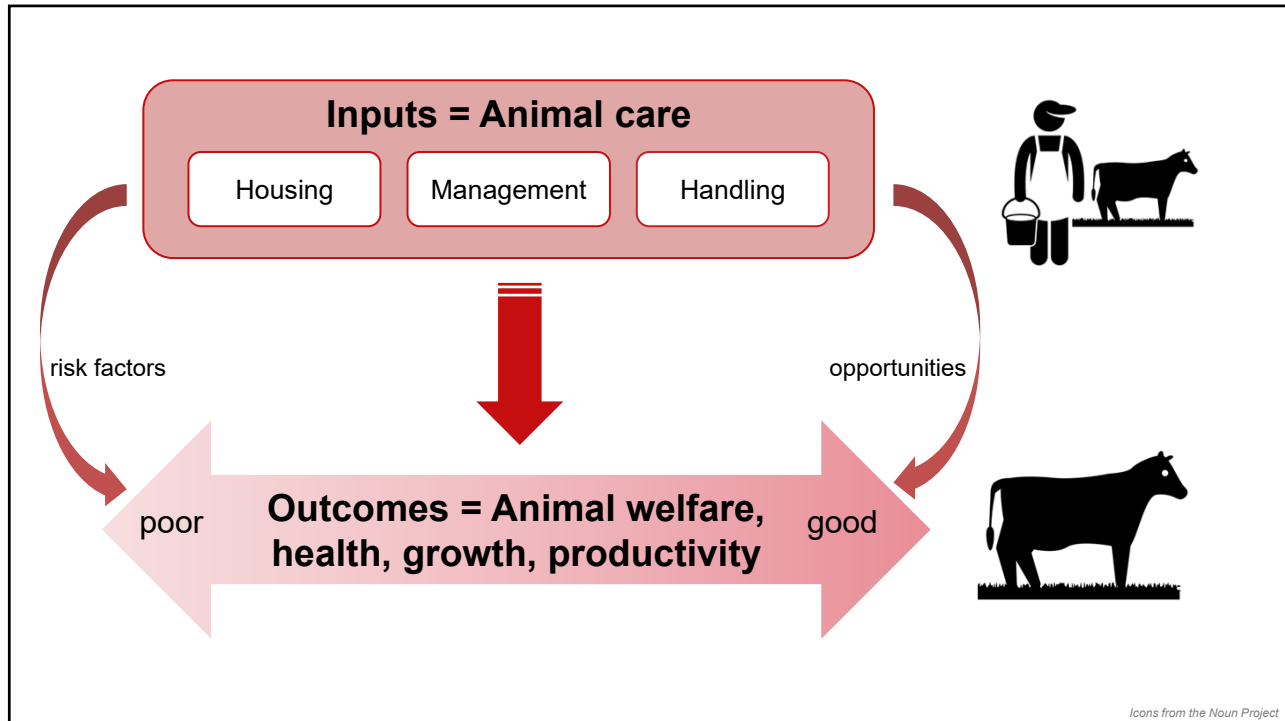


Is animal welfare a threat to the industry?

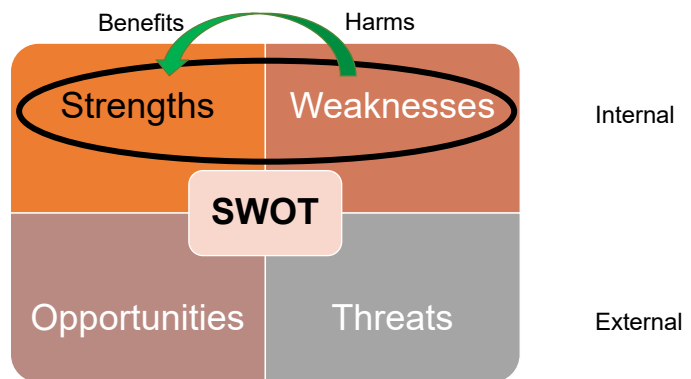


Is animal welfare a threat to the industry?

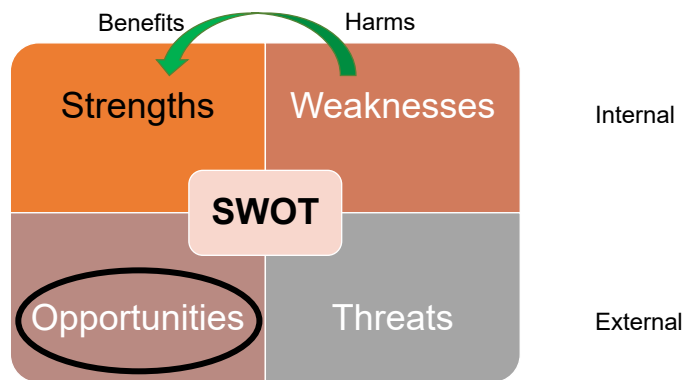
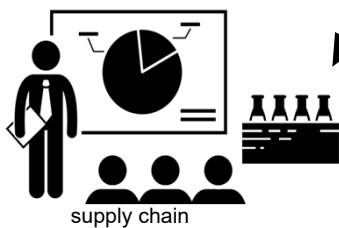




Goal: maximize animal welfare



Opportunity to provide quality assurance



Icons from the Noun Project

Consumers have choices

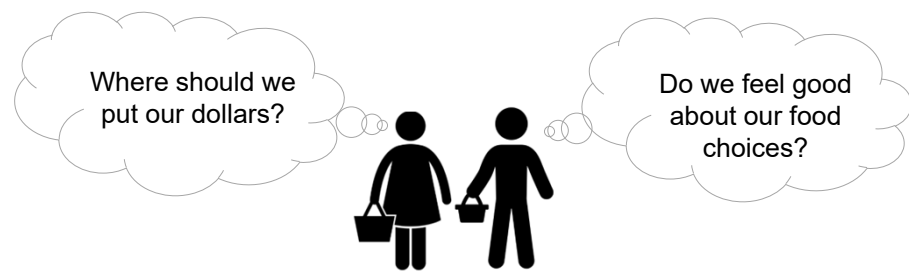
- In the U.S., < 2% of the population produces food for the rest
- How do we sustain the consumer base?
- The dairy industry needs to understand and care about what the other > 98% of citizens care about



Icons from the Noun Project

How do we keep consumers choosing dairy?

- Dairy products need to be palatable, literally
- Dairy farming practices need to be palatable – figuratively – in order to maintain “**social license**”



Icons from the Noun Project

Animal welfare is a key to dairy sustainability

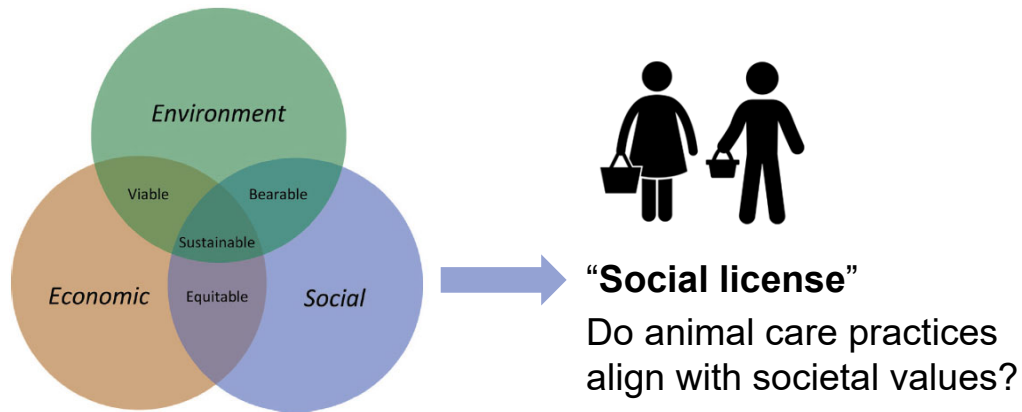
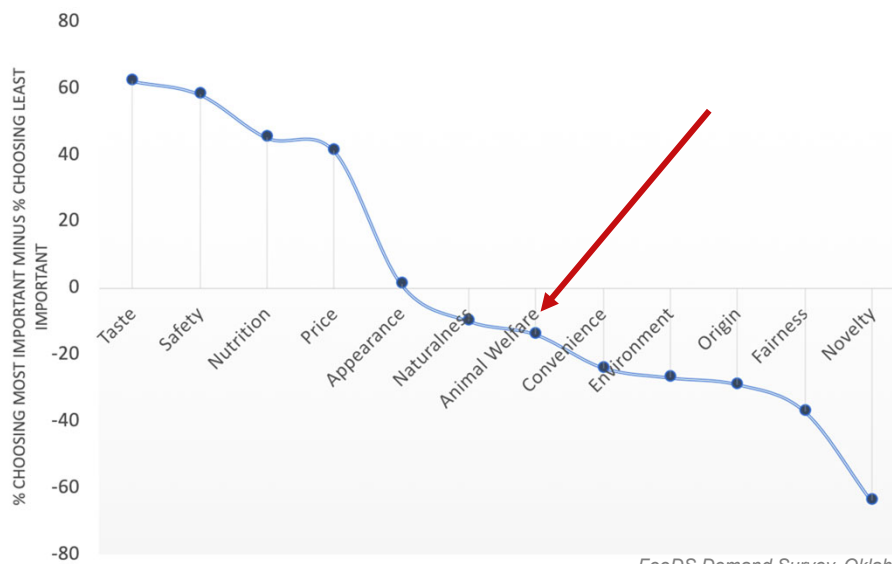


Diagram: Figure 1 in Invited review: Sustainability of the US dairy industry, von Keyserlingk et al., 2013. J. Dairy Sci. 96:5405-5425

Animal welfare beats other social issues



FooDS Demand Survey, Oklahoma State University (n = 48,000)

“Corporate Social Responsibility” is changing food production

McDonald's @McDonalds
 You have our word on it. McD.to/6016ByAdw

McDonald's USA and Canada Commit to Cage-Free Eggs

13 Million
 Number of cage-free eggs we currently source per year in the U.S.

10 Years
 Timeline to fully transition to cage-free eggs.

6:00 AM - 9 Sep 2015

303 Retweets 390 Likes

107 303 390

Consumers also have power as voters

1988: MA
 71% NO

2016: MA
 78% Yes

U.S. state ballot initiatives to regulate farm animal housing

2002: FL 55% Yes 2006: AZ 62% Yes 2008: CA 64% Yes 2009: OH 64% Yes



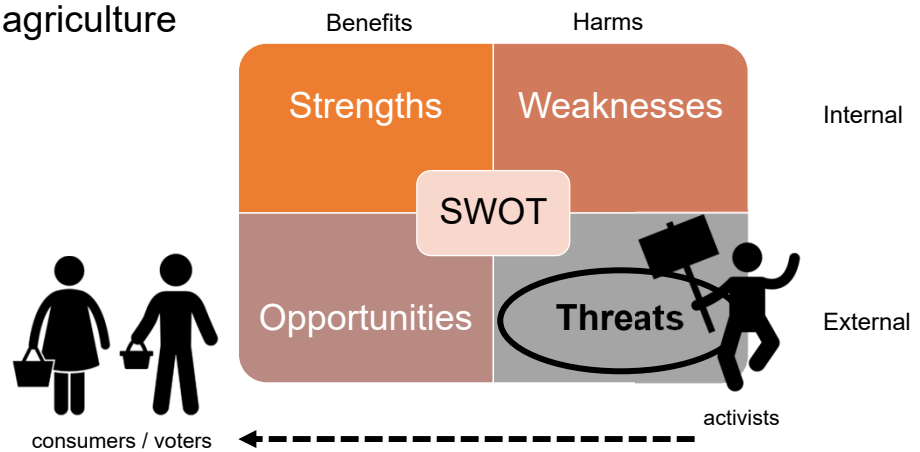
Themes: restriction of movement, behavioral opportunities

Icons from the Noun Project

Animal rights activism can be a threat

Goal: convince consumers to avoid animal products

→ end animal agriculture



Icons from the Noun Project

Animal welfare ≠ animal rights

Animal welfare

- Humans have a direct ethical obligation to animals
- Maximize quality of life for animals under the care of humans or affected by human actions
- (Ends can justify the means)

Animal rights

- Humans have a direct ethical obligation to animals
- Never justifiable to sacrifice the interests of an animal to benefit another animal or human
- (Ends do not justify the means)



Icon from the Noun Project



Mission: "exposes cruelty to farmed animals and promotes vegan eating" – C.O.K.



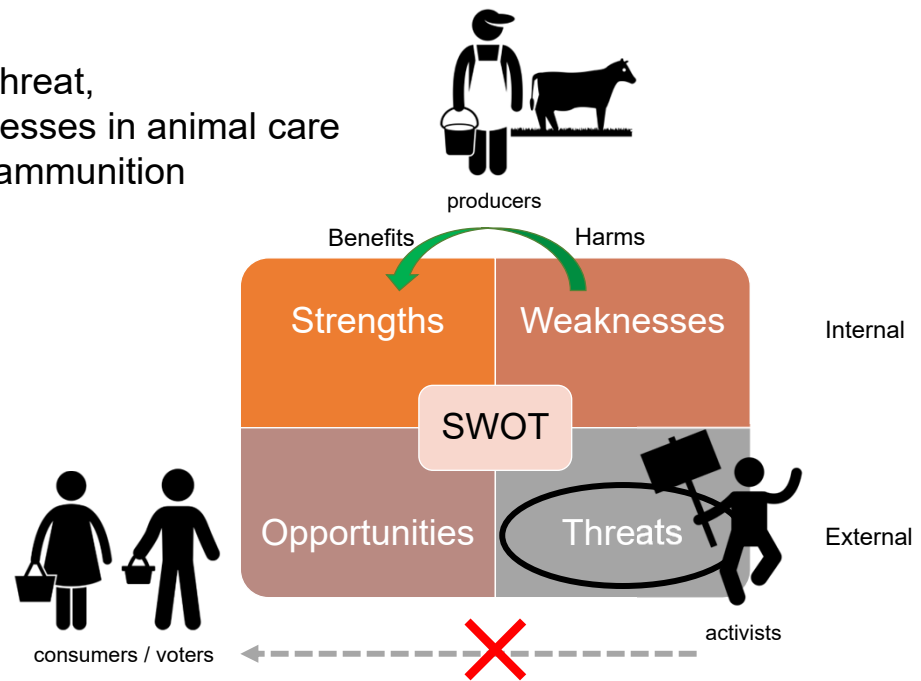
activists

- Their explicit agenda is to turn consumers off of animal production.
- They are counting on the industry NOT being willing or able to improve animal welfare.

Icons from the Noun Project

Screenshots from U.S. undercover activist video, April 2019

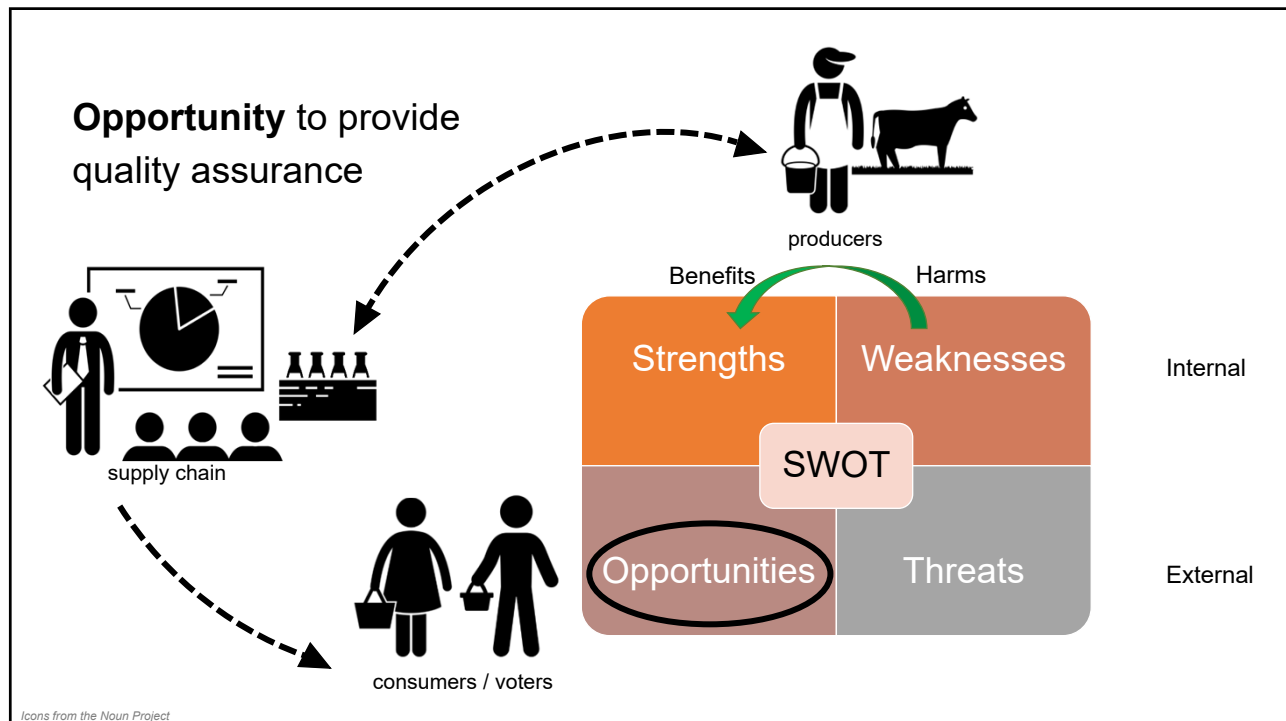
To combat that threat, minimize weaknesses in animal care to remove their ammunition



Icons from the Noun Project

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Industry-led dairy animal care QA programs



- National Milk Producers Federation:
Farmers Assuring Responsible Management (**FARM**)
→ 98% of US milk supply
(ISO certified, PAACO certified)



- Dairy Farmers of Canada + National Farm Animal Care Committee: Code of Practice + **proAction** evaluation
→ 100% of milk supply



- (Now defunct) **Dairy Well** program and audit for farms selling directly to Dean Foods (was PAACO certified)

FARM Animal Care program



“Raising the bar for the entire dairy industry by establishing dairy animal welfare management guidelines”

99% of US dairy farms participate

<https://nationaldairyfarm.com/dairy-farm-standards/animal-care/>

Goals



Improve on-farm practices



Mitigate risks



Assure dairy customers and consumers



HISTORY



In 2009, National Dairy Farmers Assuring Responsible Management (FARM)™ Program was **created by the dairy industry**, through National Milk Producers Federation with support from Dairy Management, Inc.



Through the Innovation Center, the dairy community has aligned behind FARM as the **industry-wide social responsibility program**.

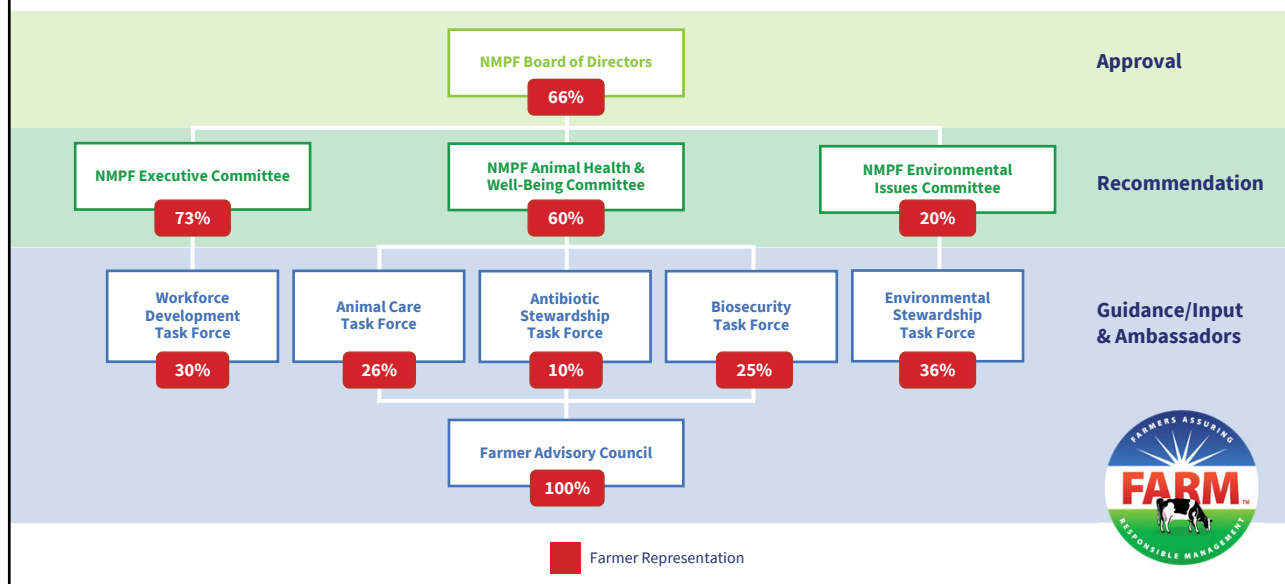


AT A GLANCE



- 1 **Cooperatives and processors sign up** to participate in one of three of the program areas on behalf of their member farms or patrons
- 2 Subject matter experts, including farmers, draft **science-based standards** and **best management practices** then NMPF board of directors approves
- 3 Evaluators conduct **second-party evaluations** and identify achievements and continuous improvement opportunities
- 4 Verifiers conduct **third-party verifications**
- 5 Cooperatives and processors use on-farm data for proof points to communicate to customers and consumers

WHO MAKES DECISIONS ABOUT FARM?



EVALUATORS AND VERIFIERS



REVIEW

- Records
- Documentation
- Written protocols



OBSERVE

- Animals
- Facilities
- Employee actions



VERIFY

Observed actions are consistent with written records and protocols



CREATE

Corrective action plans if certain standards are not met



Types of animal welfare measures

	Outcome based	Input based
Characteristics of:	animal	environment
Provides info about:	animal's state	risk factors (for poor welfare), opportunities (for good welfare)
Reflects welfare:	directly	indirectly

Animal welfare is herd-size neutral

- Review of 150 studies measuring animal-welfare indicators
- No consistent relationship (negative or positive) between herd size and animal-welfare outcomes

Robbins et al., 2016. Invited review: Farm size and animal welfare. J Anim Sci 94:5439-5455.

“You manage what you measure”

Dr. Temple Grandin
Colorado State University



Photo by Rosalie Winard

Example: Audits for humane slaughter in U.S. federally inspected beef plants

- Percent of cattle properly stunned (insensible with single captive bolt shot):
 - 1996: 30% of plants able to stun \geq 95% of cattle using only one shot
 - 1999: 90% of plants met target
 - 2015: 100% of plants met target (average 99.7%, all above 98%, most at 100%)



FARM program animal observations



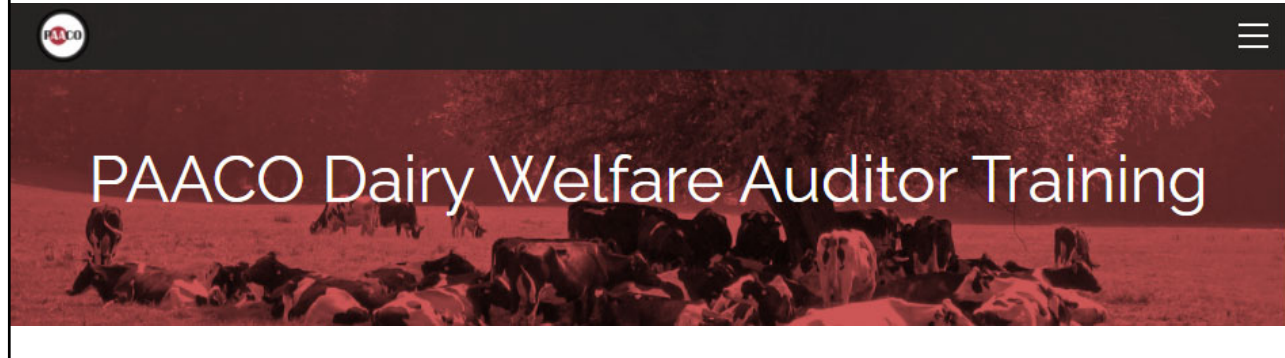
	Signs of neglect*	Hygiene	Low BCS	Lameness	Hocks, knees	Injured tails
Target	0	<10%	<1%	<5%	<5%	<5%
Lactating cows	X	X	X	X	X	X
Pre-weaned calves	X	X	X			
Post-weaned heifers	X	X	X			
Pre-fresh cows & heifers, dry cows	X	X				
Hospital pen	X					

*All down, emaciated, severely lame, or catastrophically injured cows getting treatment. Food, water, and shade provided to all cattle.

<https://nationaldairyfarm.com/dairy-farm-standards/animal-care/>

Practice scoring animal-based measures

<http://www.paacodairywelfareauditortraining.com/>



Corrective Actions



At the conclusion of a second-party evaluation, if FARM Animal Care Program standards are not met, corrective actions may be generated.

Corrective action accountability measures are categorized by **level of importance**:



**Immediate
Action Plan:**
within 48 hours



**Mandatory
Corrective
Action Plan:** within
9 months



**Continuous
Improvement Plan:**
within 3 years



Immediate Action

- Tail docking: non-compliance with 2017 ban

- Re-evaluated for meeting standard within 48 hours
 - If then meet standard, additional scheduled follow-up evaluations
 - If not, Conditionally Decertified – processors can't continue to procure from farm



Immediate Action

- **Neglect** or **willful mistreatment** of animals

- Triggers protocol to investigate “credible allegations” to determine within 48 hours if substantial evidence supports neglect or willful mistreatment
 - Substantiated non-egregious evidence found
 - procedures and re-evaluation timeline for corrective actions
 - Substantiated egregious (multiple incidences establishing a pattern, or a single aggravated incident) evidence found
 - Decertified with waiting period before potential reinstatement

MCAPs



Re-evaluated for meeting standard within 9 months

- Signed Cow Care Agreement for **hired employees** with animal care responsibilities
- Continuing education in job-specific animal care & handling:
 - Pre-weaned calf care
 - Non-ambulatory animals
 - Euthanasia
 - Determining fitness for transport



MCAPs



Re-evaluated for meeting standard within 9 months

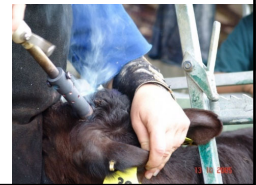
- Involvement with Veterinarian of Record:
 - VCPR agreement signed annually
 - Written Herd Health Plan reviewed annually by vet
- Feed and water for all ages of cattle
- Fitness for transport protocol



MCAPs

Re-evaluated for meeting standard within 9 months

- Pre-weaned calf practices/protocols:
 - Colostrum within 6 hours
 - Feed and water access by day 3
 - Disbud by 8 weeks old
 - Handling / moving
 - Milk/replacer, feed, water procedures



MCAPs

Re-evaluated for meeting standard within 9 months

- Non-Ambulatory Animal practices/protocols
 - Handling/movement
 - Prompt medical care
 - Feed, water
 - Protection from weather, ambulatory animals, predators



Dr. Nigel Cook, UW-Madison SVM

MCAPs



Re-evaluated for meeting standard within 9 months

- Euthanasia practices/protocols
 - Criteria for animals to be euthanized
 - Technique approved by AABP/AVMA
 - Appropriate carcass disposal
 - (*Identify a primary & secondary person)
 - (*Method of confirmation of death)

**New for Version 5.0, effective July 2024*

CIPs



Re-evaluated for improving toward standard within 3 years

- Signed Cow Care Agreement for **family members*** with animal care responsibilities
- Continuing education in job-specific animal care & handling:
 - Pre-weaned calf care
 - Non-ambulatory animals
 - Euthanasia
 - Determining fitness for transport



**New for Version 5.0, effective July 2024: This will become an MCAP instead of a CIP.*



CIPs

Re-evaluated for improving toward standard within 3 years

- Disbudding pain management protocol & practices*
 - Expected regardless of method of disbudding**
 - Producer expected to work with veterinarian to determine appropriate pain mitigation strategy



New for Version 5.0, effective July 2024:

* This will become an **MCAP** instead of a CIP.

** The only acceptable disbudding methods will be caustic paste or cautery.



CIPs

Re-evaluated for improving toward standard within 3 years

- Permanent drug treatment records (electronic or paper) maintained for review by vet of record

CIPS

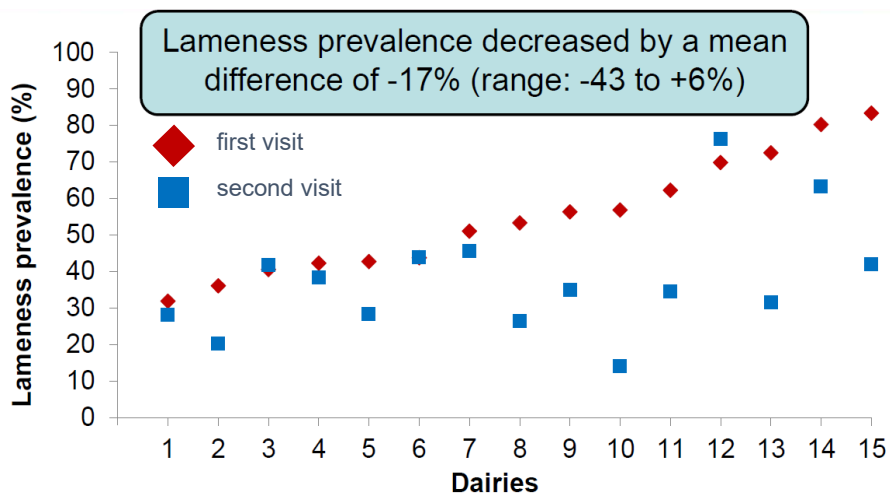


Re-evaluated for improving toward standard within 3 years

	Low BCS	Severe Lameness	Moderate Lameness*	Hocks, knees	Injured tails
Target	<1%	<5%	<15%	<5%	<5%
Lactating cows	X	X	X	X	X
Pre-weaned calves	X				
Post-weaned heifers	X				

*New for Version 5.0, effective July 2024

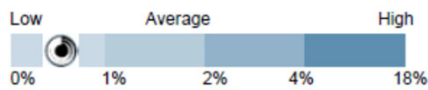
Data → motivates change → improves results



von Keyserlingk et al. 2012. J. Dairy Sci. 95:7399-7408; Chapinal et al. 2014. Vet. J. 202:646-648

Peer comparison vs. fixed targets/goals?

Severe Lameness

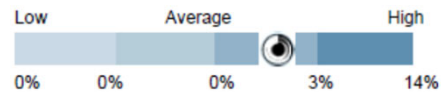


Your Cows

Severely Lame: 0.7%



Severe Hock Injury



Your Cows

Severely Injured: 1.4%

Program targets:

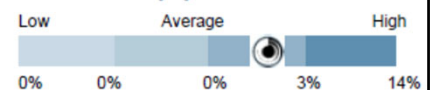
- proAction (Canada): <10%
- FARM: < 5%
- Dairy Well (Dean): ≤ 1%

Audience poll at a dairy producer conference

If your farm received this report with these targets, would you want to reduce your rate of severe hock injuries?

- Yes, because I want to be in the top half of farms
- Yes, because I don't meet the strictest target (< 1%)
- Yes, because I want to improve regardless
- No, because other farms have 10 times as many severe hock injuries
- No, because I meet the targets for FARM (< 5%) and proAction (< 10%)
- No, because I think 1.4% is pretty low in general
- Other

Severe Hock Injury



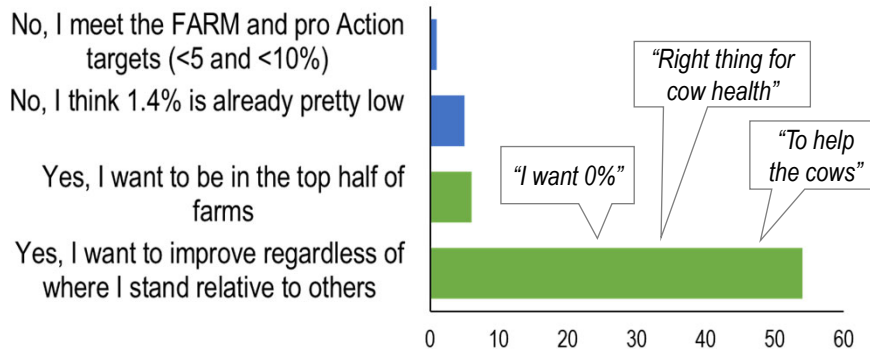
Your Cows

Severely Injured: 1.4%



Audience poll at a dairy producer conference

If your farm received this report, would you want to reduce your rate of severe hock injuries (1.4% of the herd)?



Van Os, 2019 unpublished data

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- 2 Subject matter experts, including farmers, draft **science-based standards** and **best management practices** then NMPF board of directors approves **Back to this**

- Note that standards are based on the **consensus** of scientific literature, balanced with feasibility.
- The program standards are a **minimum bar** for the industry.
- Scientific research can inform further enhancements to animal welfare which are **not** FARM program requirements.

Scientific research informs best practices

- ✓ What do the animals need to experience good welfare?
- ✓ What are the expectations of various human stakeholders?
- ✓ How do we provide for these needs and expectations on farm?

Biological science: understanding animals



Social science: understanding people



What is important for animal welfare?

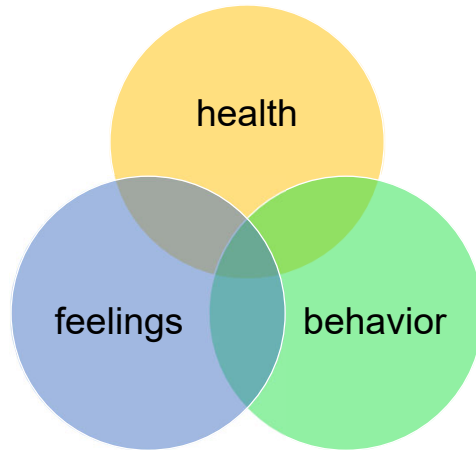


Figure adapted from Fraser, et al. 1997. Animal Welfare 6:187-205

What is important for animal welfare?



biological functioning
(e.g., health, production)

- Disease
- Injury
- Production
- Growth
- Reproduction
- Biomarkers
- etc.



<https://www.nadis.org.uk/diseases-a-z/cattle/lameness-control-in-dairy-herds/part-2-mobility-scoring-how-do-you-score/>

Figure adapted from Fraser, et al. 1997. Animal Welfare 6:187-205

What is important for animal welfare?



Photo: Sarah Adcock

feelings

affective (emotional) state
(+ vs – experience)

Tests:

- Judgment bias
- Aversion race
- Conditioned place preference
- etc.

Figure adapted from Fraser, et al. 1997. *Animal Welfare* 6:187-205

What is important for animal welfare?



behavior

ability to express
behavioral adaptations

- Time budgets
- Abnormal behavior
- Preference tests
- Motivation tests
- etc.

Figure adapted from Fraser, et al. 1997. *Animal Welfare* 6:187-205

What is important for animal welfare?

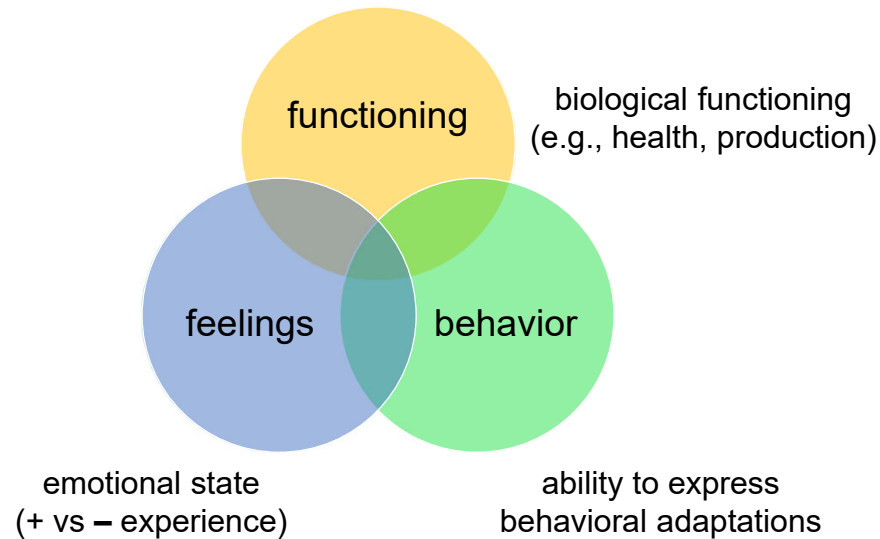
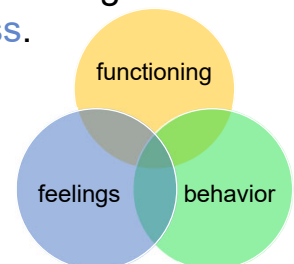


Figure adapted from Fraser, et al. 1997. Animal Welfare 6:187-205

American Veterinary Medical Association

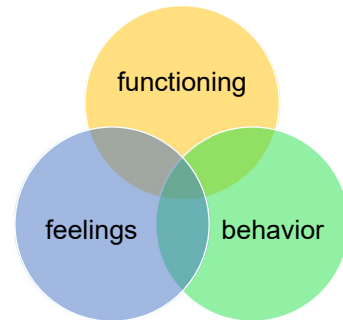
Animal welfare means how an animal is coping with the conditions in which it lives.

An animal is in a good state of welfare if (as indicated by scientific evidence) it is **healthy**, **comfortable**, **well nourished**, safe, able to express **innate behavior**, and if it is not suffering from **unpleasant states** such as **pain**, **fear**, and **distress**.



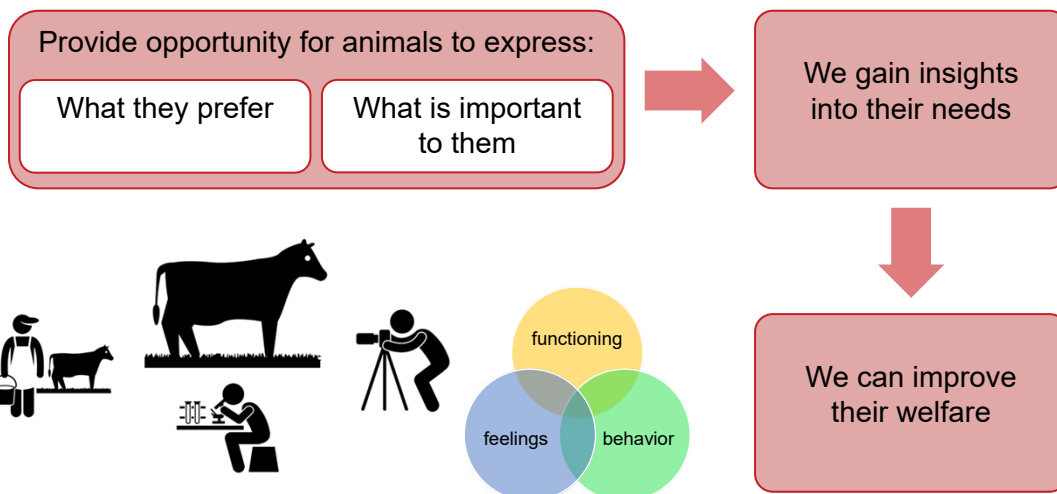
The Five Freedoms

- 1) Freedom from **hunger** and **thirst**
- 2) Freedom from **discomfort**
- 3) Freedom from **pain**, **injury**, and **disease**
- 4) Freedom to express [most] **normal behavior**
- 5) Freedom from **fear** and **distress**



Farm Animal Welfare Council (2009)

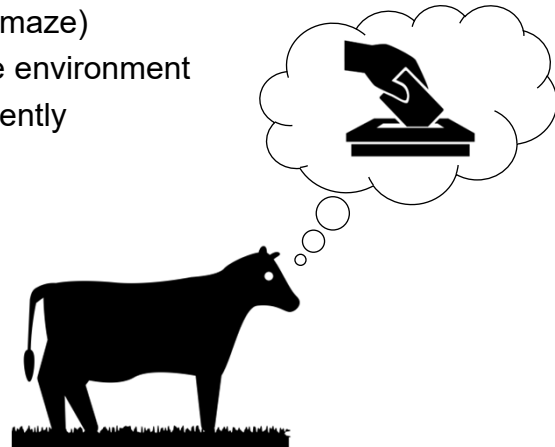
Giving cows a voice through science



Icons from the Noun Project

Preference: Voting with their feet

- Preference can be evaluated in:
 - Short-term testing scenarios (e.g., Y-maze)
 - Observing animals' behavior in home environment
- Option used more or chosen more frequently
→ indicates preference



Icons from The Noun Project

What does relative preference tell us?

- Ranked choice among presented options
- Valence unknown



vs.



Icing on the cake?



vs.



Desirable vs. aversive?

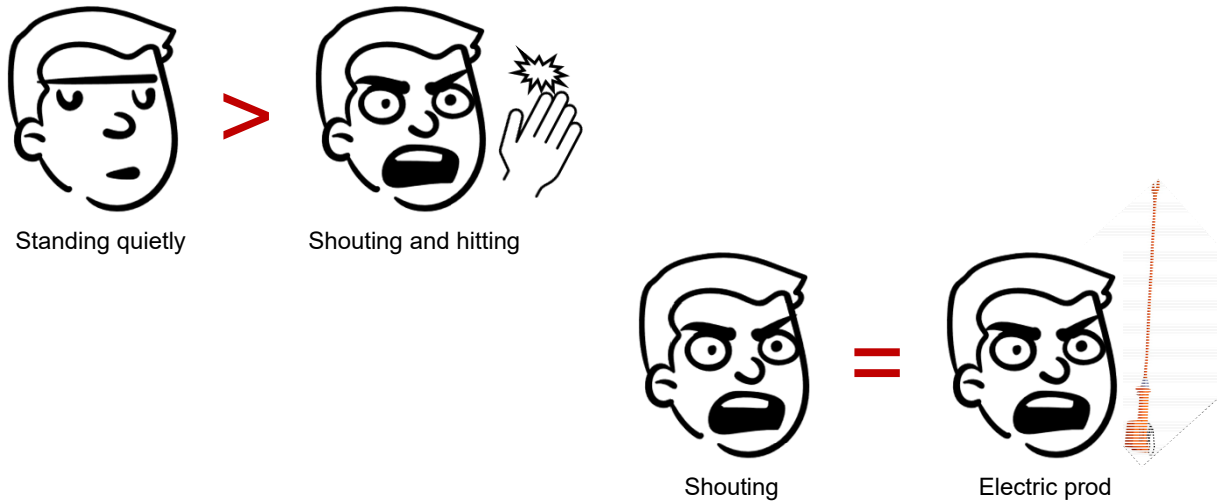


vs.



Lesser of two evils?

Example: Preferences for handling techniques

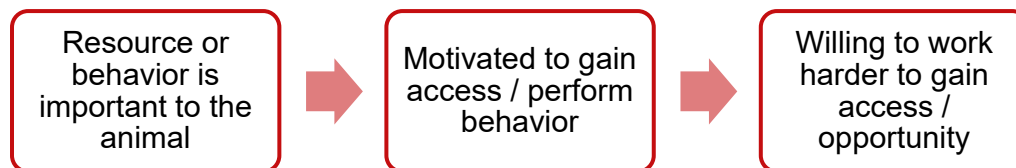


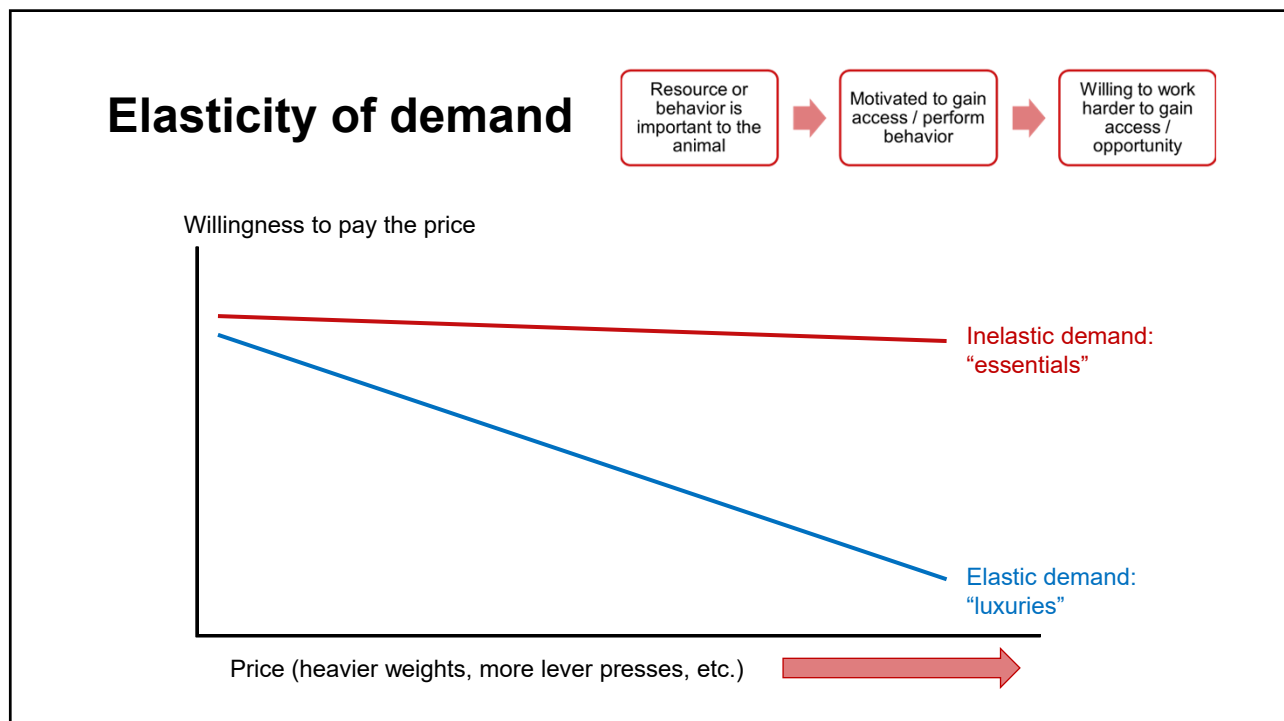
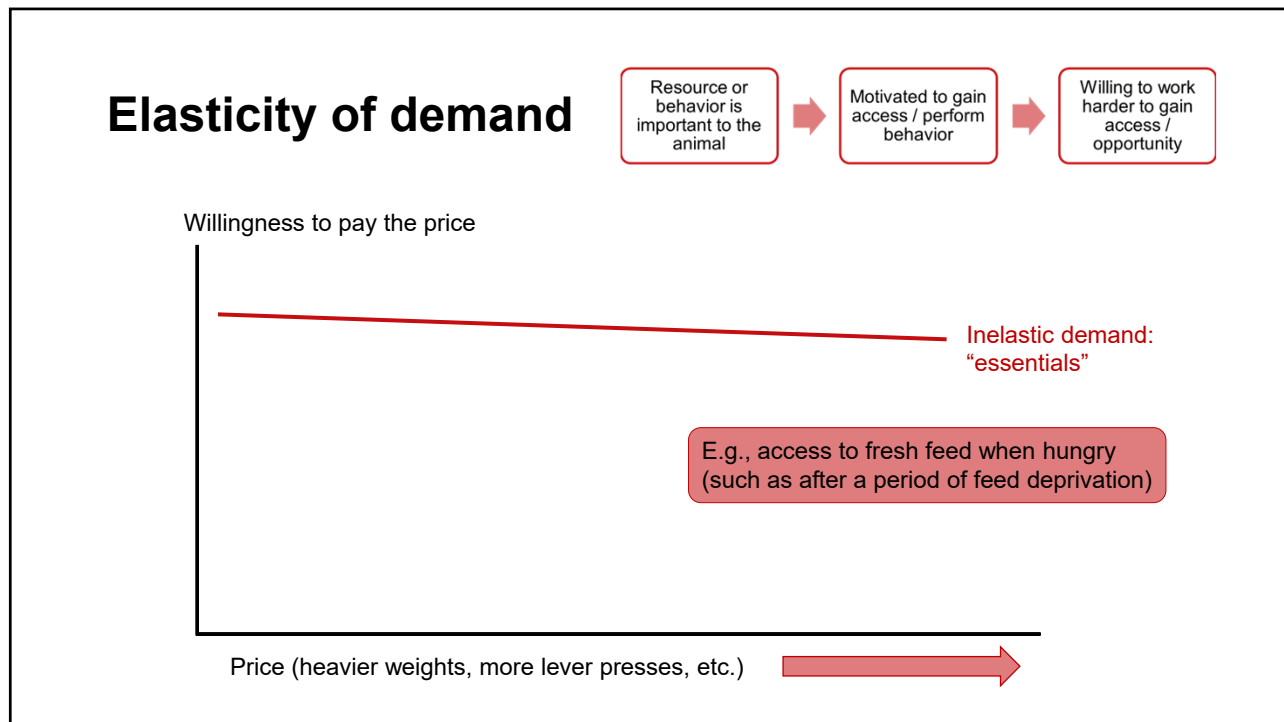
Pajor et al., 2003. Appl. Anim. Behav. Sci. 80:93-107.

Motivation: How much is it worth to them?

Ask animals to pay an increasing “price”:

- Push weights
- Press a button/lever repeatedly
- Navigate obstacles



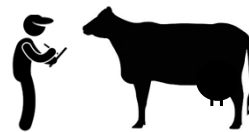


Topic: Do cows prefer barns or pasture?

- Members of the public often expect cows to have pasture access



- But what do the cows themselves think?
→ the answer is both, or it depends



Icons from The Noun Project

Schuppli et al., 2014. J. Anim. Sci. 92:5185-5192.

Cows work hard to gain access to pasture

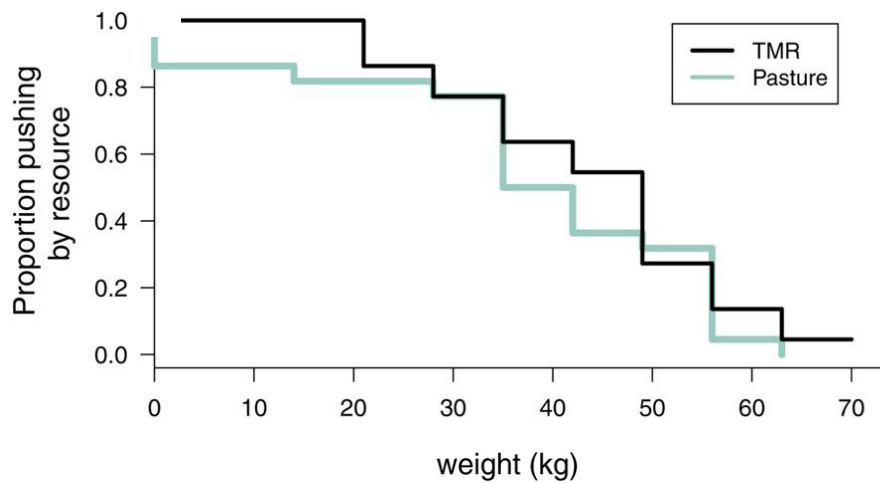
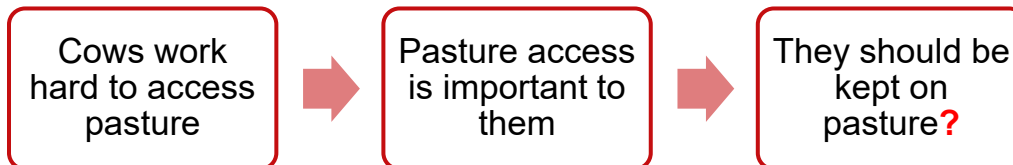
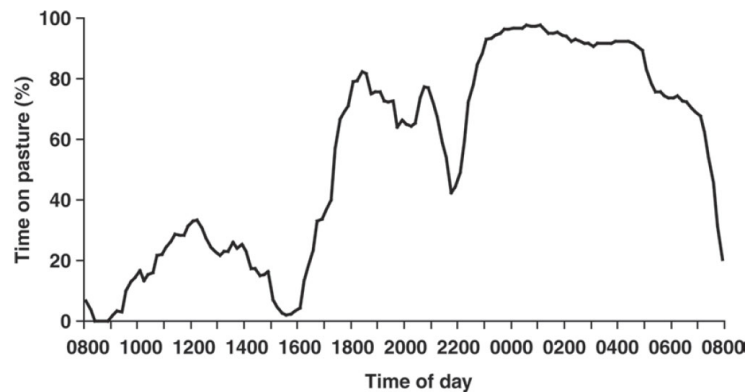


Figure from: von Keyserlingk et al. 2017. Sci. Reports 7:44953.

What should we conclude?



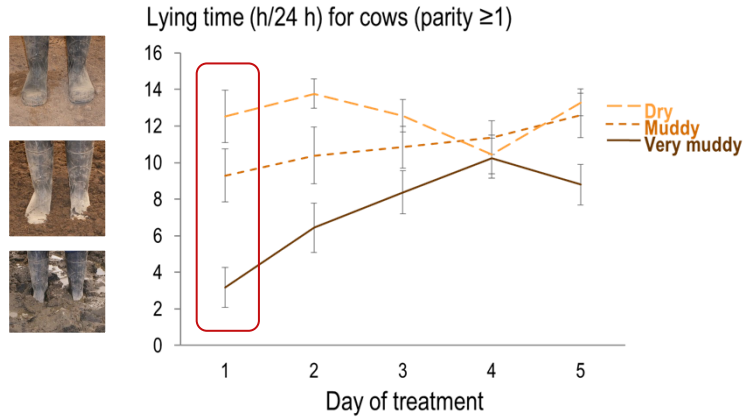
Cows prefer to be outside... AND inside



- Preference for pasture vs. the barn depended on time of day + weather
- Spent more time on pasture at night (when not rainy)
- Cows preferred opposite of common management practice

Figure from: Legrand et al. 2009, J. Dairy Sci. 92:3651-3658.

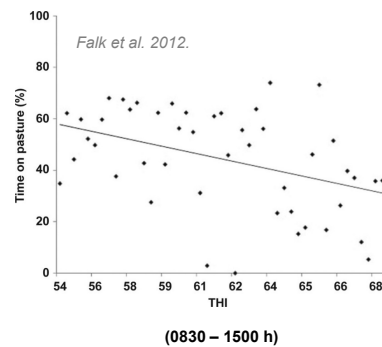
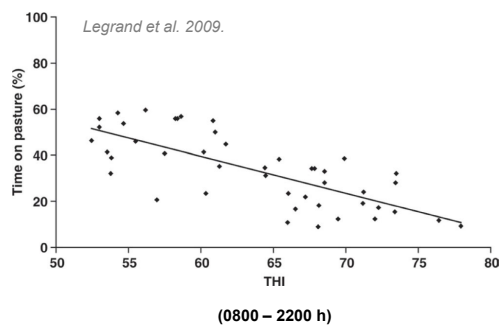
Referent: Importance of rest



- Lying time severely reduced in muddier conditions, especially in first 24 hours
- Dry, comfortable resting space essential for cow welfare

Adapted from: Chen [Van Os] et al., 2017. *J. Dairy Sci.* 100:2090-2103.

Preference for shelter magnified in hot weather

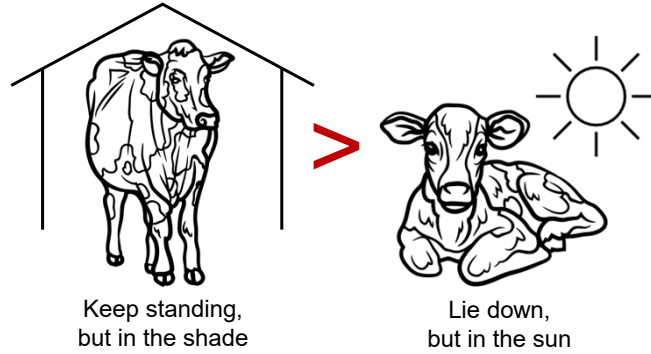


Cows spent less time on pasture during the daytime as temperature-humidity index (THI) increased

Figures from: Legrand et al. 2009. *J. Dairy Sci.* 92:3651-3658; Falk et al. 2012. *J. Dairy Sci.* 95:6409-6415.

Cows are highly motivated for shade

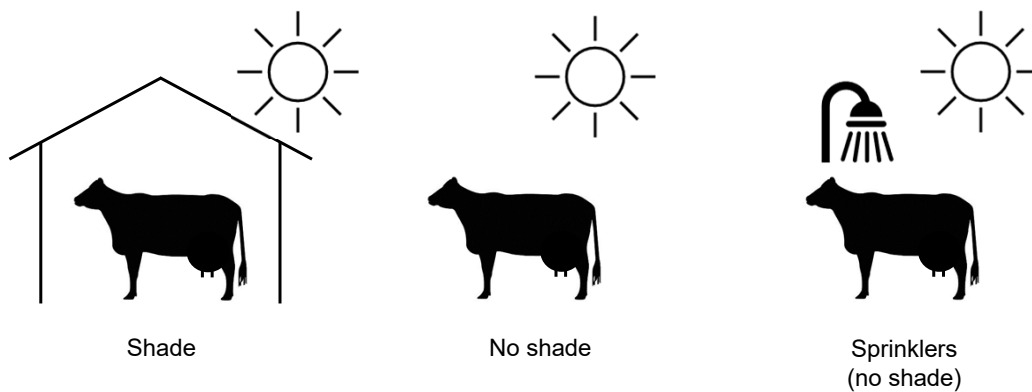
- After 12 hours of forced standing, cows continued to stand, as long as they could do so in the shade
- Shelter from the hot sun is extremely important to cows



Icons by 'Hey Rabbit' from The Noun Project

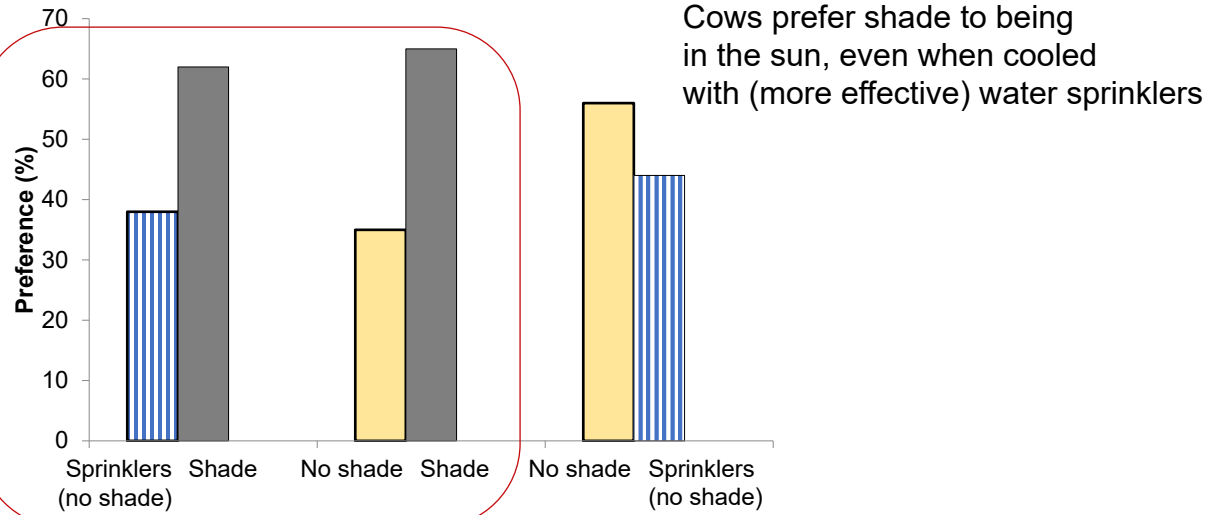
Schütz et al., 2008. Appl. Anim. Behav. Sci. 114:307-318.

Cows prefer shade

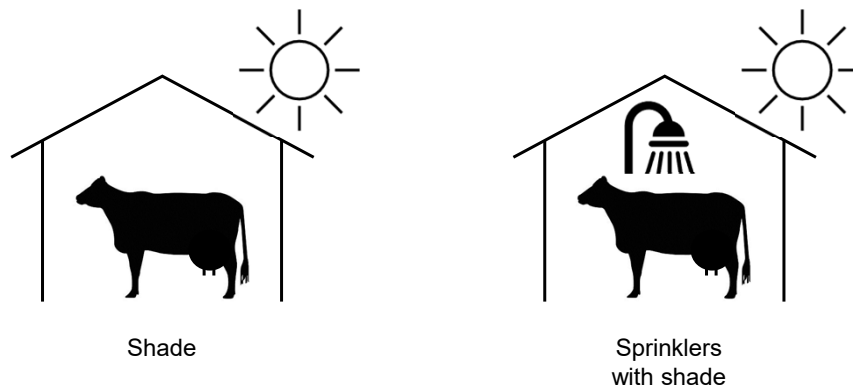


Schütz et al., 2011. J. Dairy Sci. 94:273-283.

Cows prefer shade



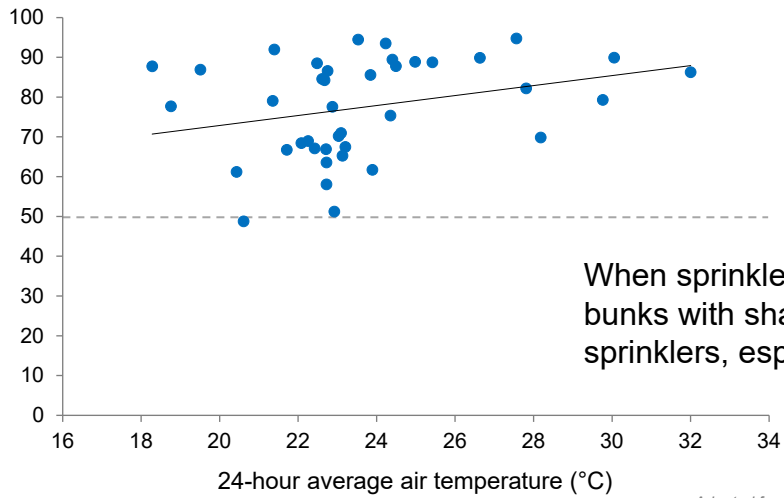
Avoid tradeoffs between important resources



Chen [Van Os] et al., 2013. J. Dairy Sci. 96:5035-5045.

Preference for combining important resources

Preference (% of time) for feed bunk with sprinklers (vs. just shade)



Adapted from: Chen [Van Os] et al., 2013. J. Dairy Sci. 96:5035-5045.

Ideally, offer cows freedom to express choices



Outline

1. What do we mean by animal welfare?
2. The role of animal welfare in the dairy industry
3. Animal welfare quality assurance in the US industry
4. **Scientific study of animal welfare**
 - A. Biological science
 - B. **Social science**

Scientific research informs best practices

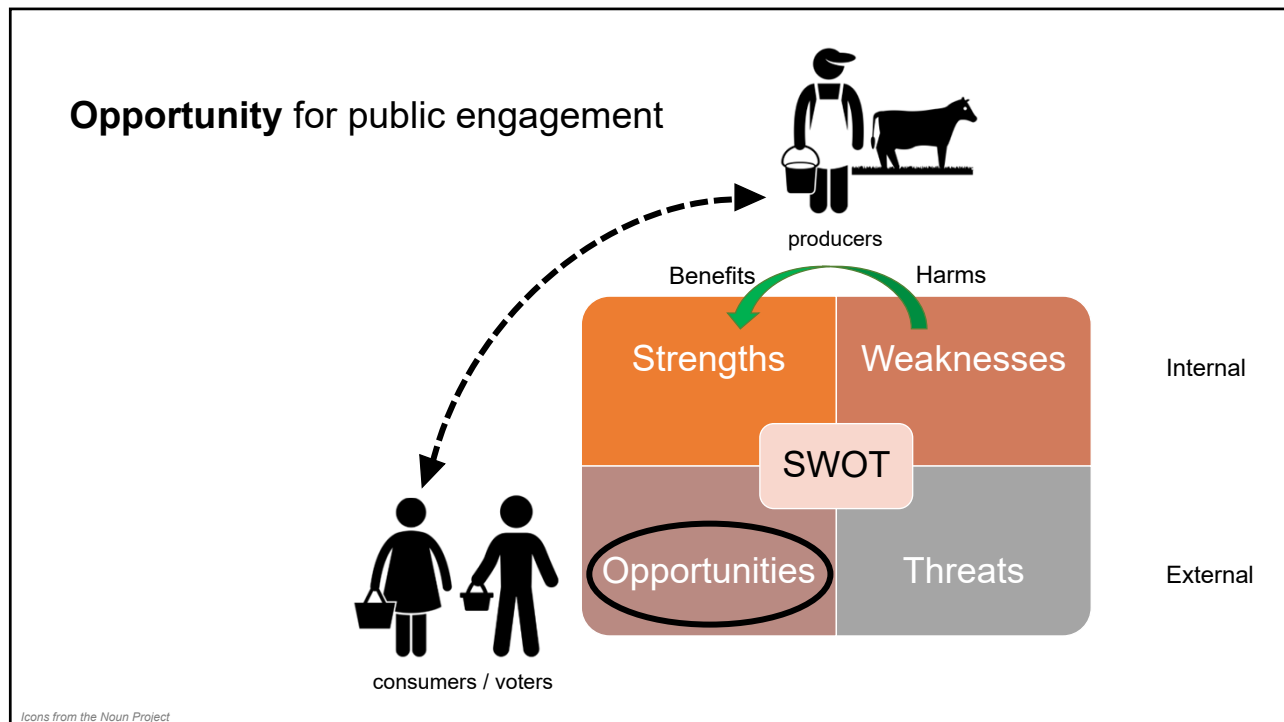
- ✓ What do the animals need to experience good welfare?
- ✓ What are the expectations of various human stakeholders?
- ✓ How do we provide for these needs and expectations on farm?

Biological science: understanding animals



Social science: understanding people





Where are consumers getting information?

- 56% who responded to a U.S. survey (n = 798) indicated they did *not* have a source for information on animal welfare
- Of the remaining people who *did* have a source:
 - Over 40% cited animal-rights organizations as their primary source of information about animal welfare!
 - One in five people had reduced their pork consumption in the last 3 years due to animal welfare concerns

McKendree et al., 2014. J. Anim. Sci. 92:3161-3173.

Is “telling our story” the answer?



“Consumers today just don’t understand how their food is produced.

If we tell our story better, they will learn the facts and accept how we care for our animals.”

“yes and no...”



Icons from the Noun Project

Ventura et al. 2016. PLoS ONE 11:e0154733.

Transparency is critical, but insufficient

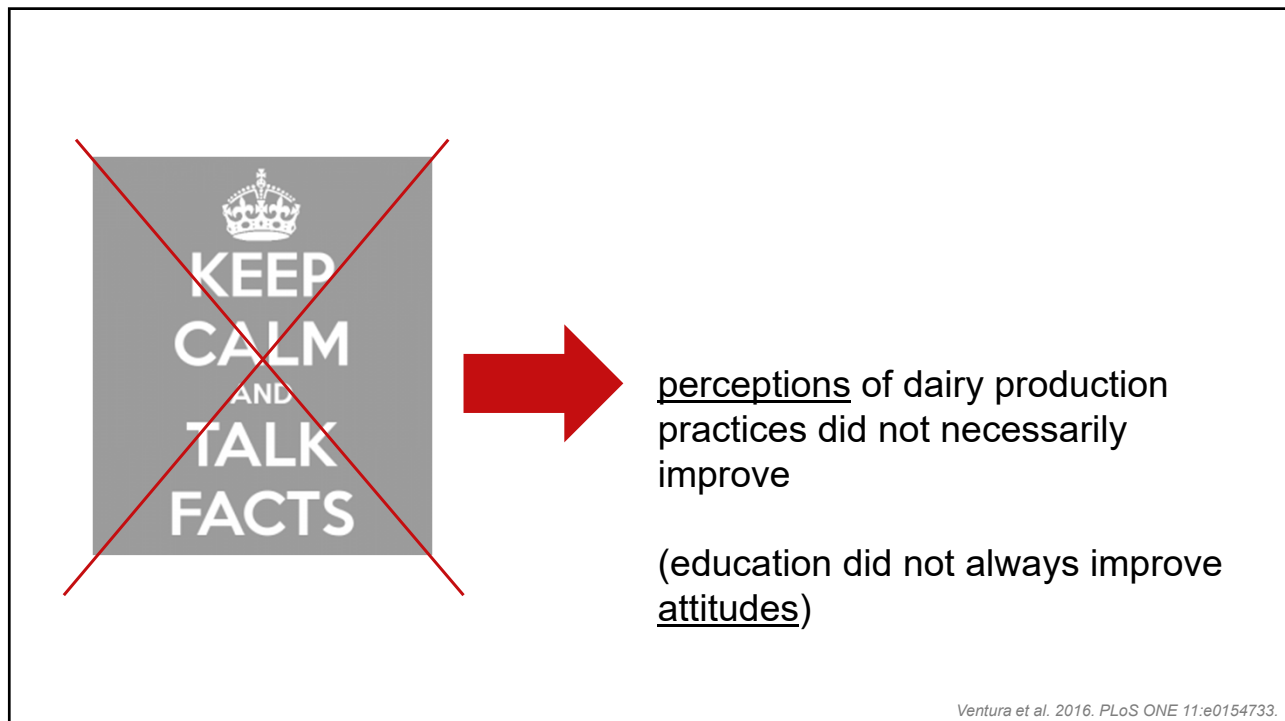
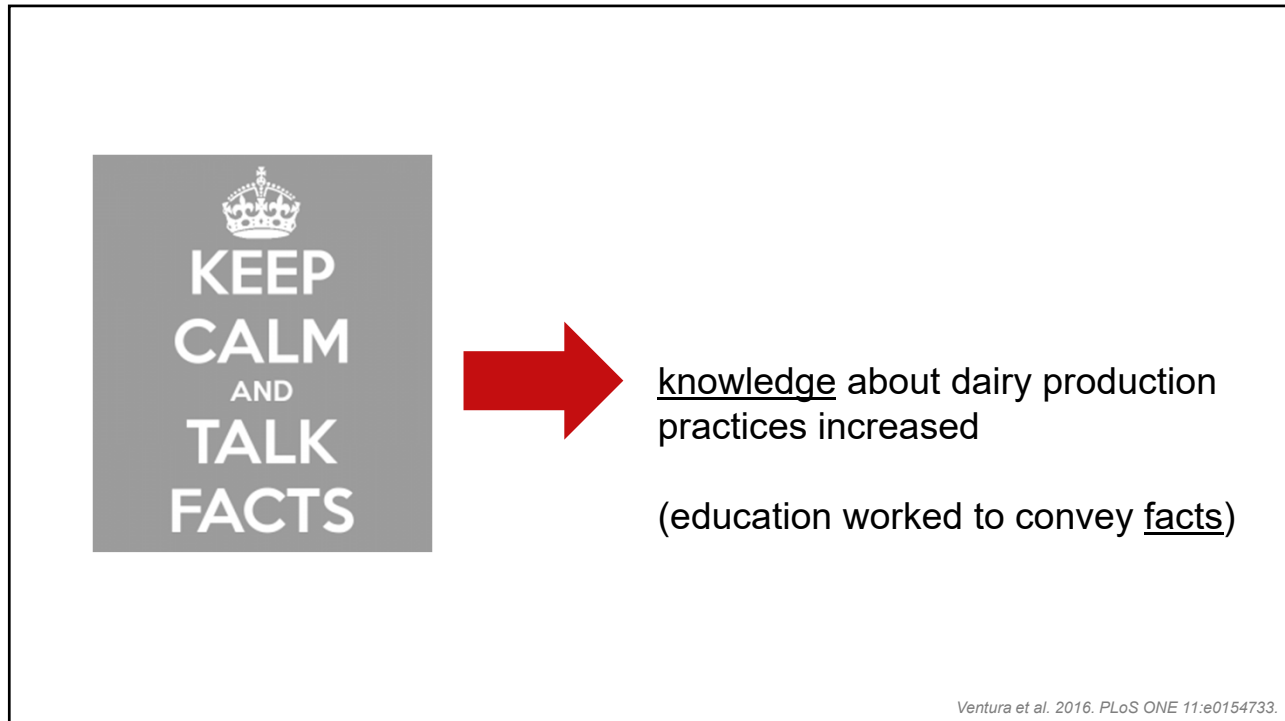
RESEARCH ARTICLE PLOS ONE

What Difference Does a Visit Make? Changes in Animal Welfare Perceptions after Interested Citizens Tour a Dairy Farm

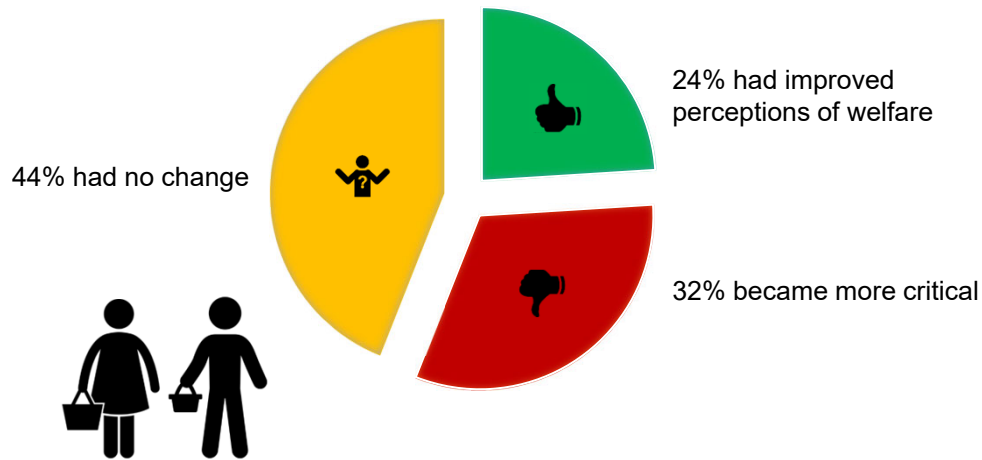
Beth Ann Ventura¹, Marina A. G. von Keyserlingk¹, Hannah Wittman², Daniel M. Weary^{1*}

¹ Animal Welfare Program, University of British Columbia, Vancouver, BC, Canada, ² Centre for Sustainable Food Systems, University of British Columbia, Vancouver, BC, Canada





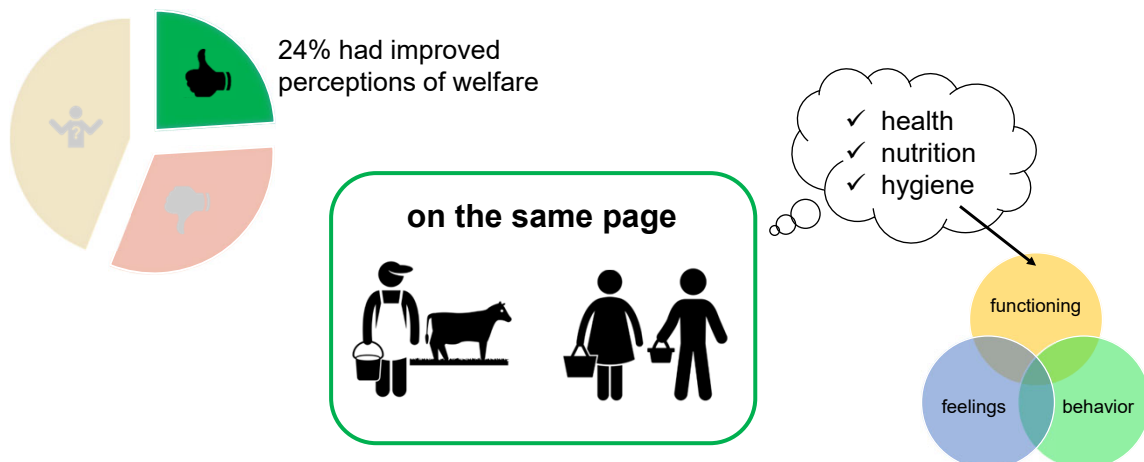
Educational farm visit had variable effects on people's perceptions of welfare



Icons from the Noun Project

Adapted from Ventura et al. 2016. PLoS ONE 11:e0154733.

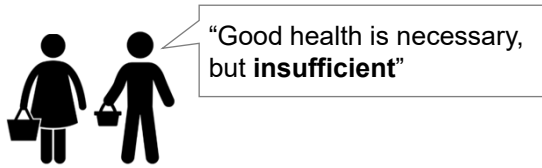
Perceptions after farm visit improved when shared values were supported



Icons from the Noun Project

Adapted from Ventura et al. 2016. PLoS ONE 11:e0154733.

A good life means more than “just” health

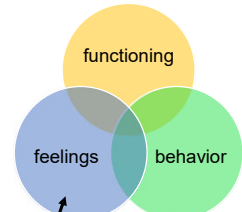
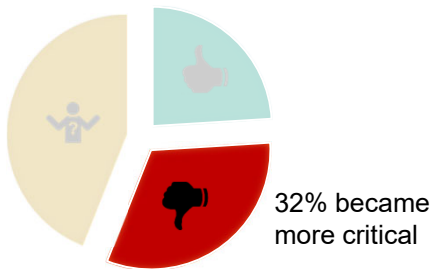


Themes: restriction of movement, behavioral opportunities

Icons from the Noun Project

Cardoso et al. 2016; De Greef et al. 2005; Ventura et al. 2015, 2016

Perceptions after farm visit worsened when other concerns were not satisfied



- ✓ space?
- ✓ pasture?
- ✓ cow-calf separation?

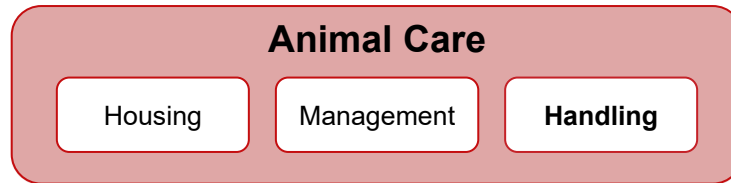
not on the same page



Icons from the Noun Project

Adapted from Ventura et al. 2016. PLoS ONE 11:e0154733.

How do we identify shared values?



Next session:

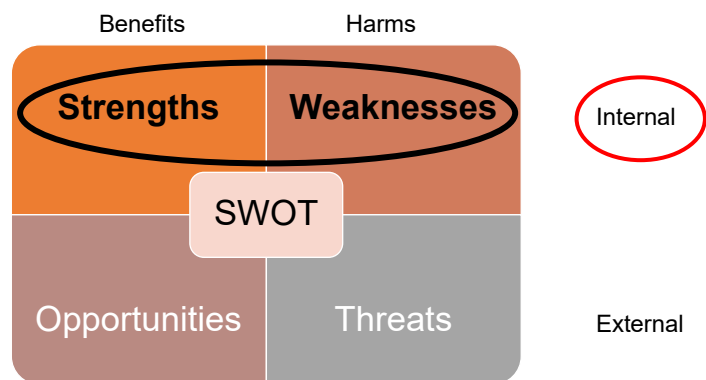
Animal handling as an example topic for building public trust in dairy farming practices

Icon from the Noun Project

Take-home message

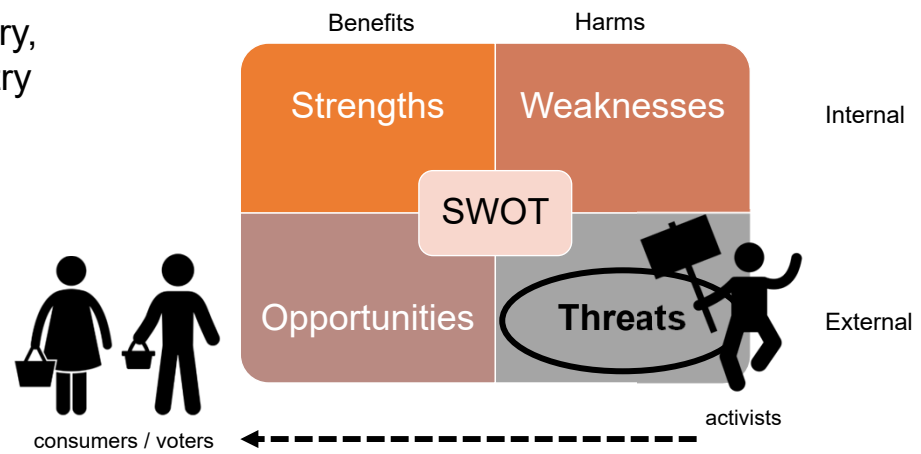
Animal welfare is a key to the sustainability of the dairy industry

– but not because it represents a threat



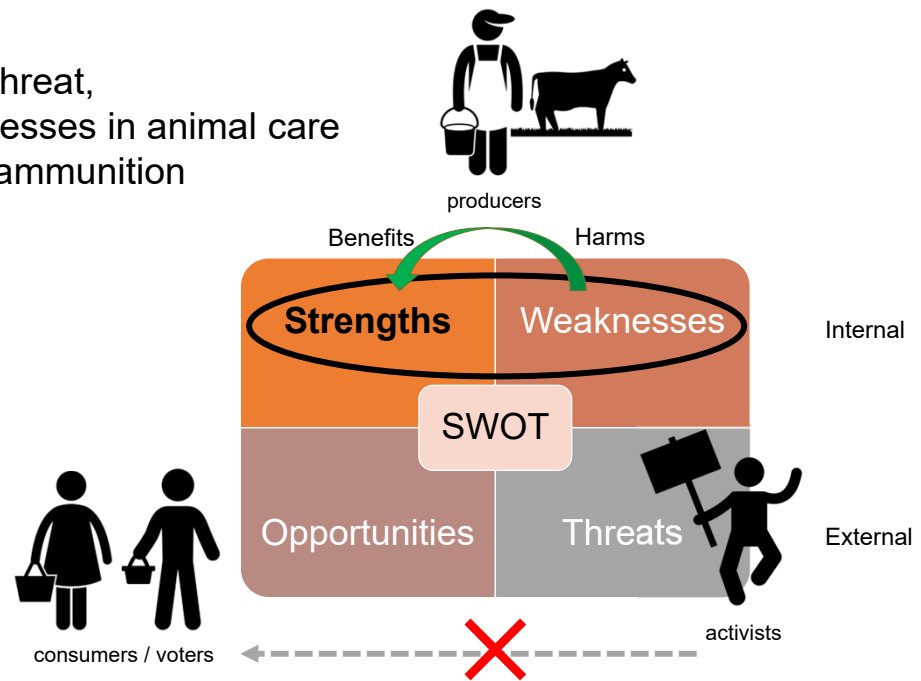
Take-home message

Goal of **animal rights activism**: turn consumers away from dairy, end the industry

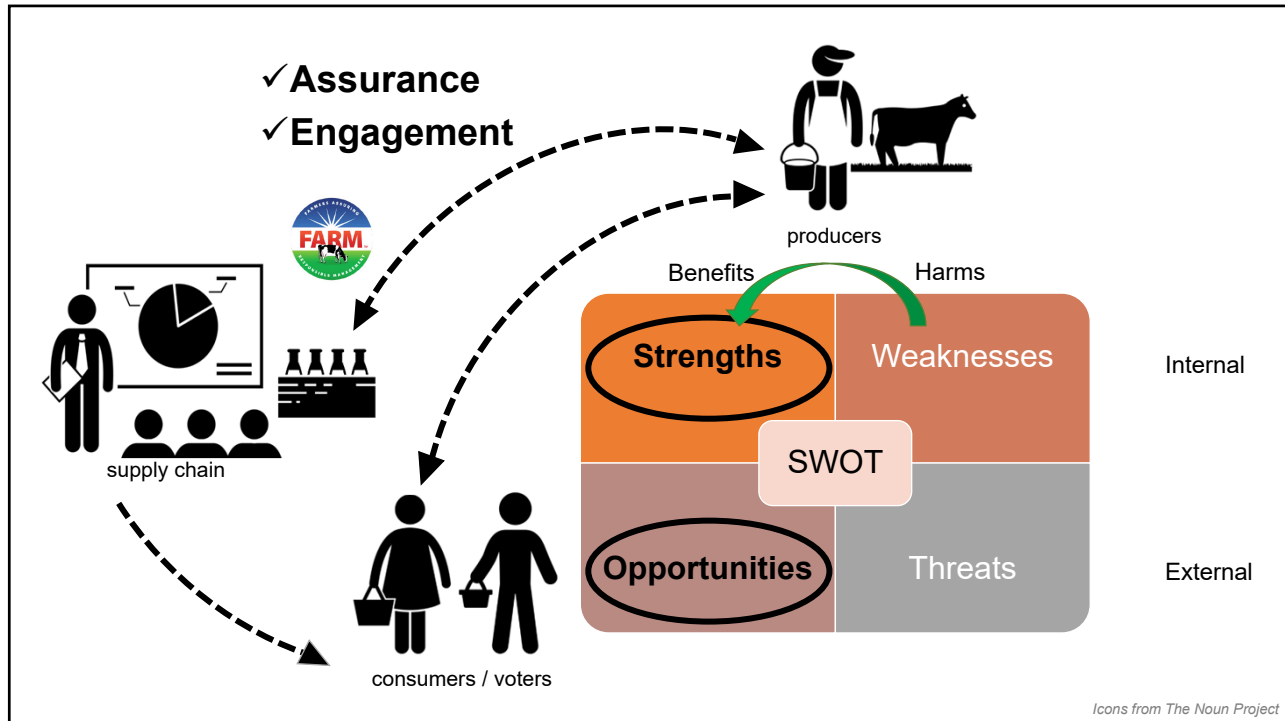


Icons from The Noun Project

To combat that threat, minimize weaknesses in animal care to remove their ammunition



Icons from The Noun Project



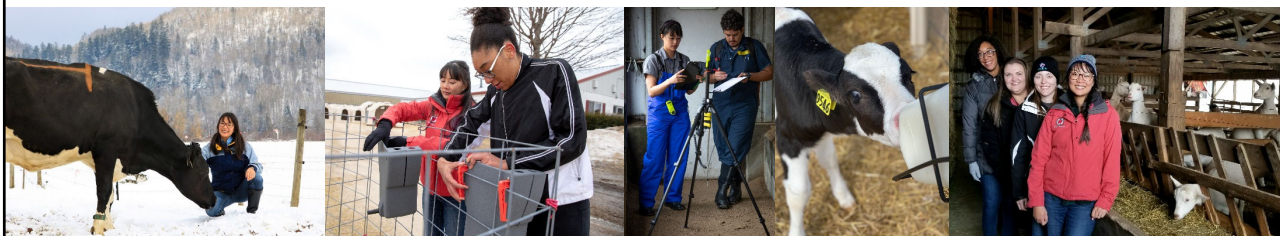
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UNIVERSITY OF WISCONSIN-MADISON



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General Mills^g, Ag Environmental Resources (Munters)^g, Zinpro Corp.^g, Novus International^g, Nielsen-Kellerman (Kestrel Instruments)^g, Coburn Co.^g, Hampel Corp. (Calf-Tel)^g, Ag Consulting Team^g, Zoetis^g