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

Jennifer Van Os
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Extension Specialist in Animal Welfare

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?

What is animal welfare?

provide animal care

experience animal welfare

dairy farmers

dairy cattle
Who is invested in animal welfare?

- the animals
- farmers and industry
- dairy organizations and supply chain
- the public (consumers, voters)

Ethical question: should we engage in this practice?

- YES we should
- NO we should not

Scientific question: how can we make this practice best for the animal?

Scientific question: what are better alternatives for the animal?

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

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

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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

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*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
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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 can’t accept it – such studies should be banned

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
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

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).

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.


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.

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).


Ethical perspectives

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

Willing to accept use of animals for human purposes

Believe we have direct ethical obligations to animals*

(*at least some animals)
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The role of animal welfare on dairy farms

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
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<tbody>
<tr>
<td>Benefits the business</td>
<td>Harms the business</td>
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</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threats</th>
</tr>
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<tbody>
<tr>
<td>Internal to the business</td>
<td>External to the business</td>
</tr>
</tbody>
</table>

SWOT
Is animal welfare a threat to the industry?

Benefits the business

Harms the business

Internal to the business

Strengths  Weaknesses

External to the business

Opportunities  Threats

SWOT

Internal to the business

Benefits the business

Harms the business

Is animal welfare a threat to the industry?

Strengths  Weaknesses

Opportunities  Threats

SWOT

Internal to the business

Benefits the business

Harms the business

Is animal welfare a threat to the industry?

Strengths  Weaknesses

Opportunities  Threats

SWOT

Internal to the business

Benefits the business

Harms the business

No
Housing  Management  Handling

Inputs = Animal care

Outcomes = Animal welfare, health, growth, productivity

Animal care is central to dairy farming

Benefits the business  Harms the business

Internal to the business  Strengths  Weaknesses

External to the business  Opportunities  Threats
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

Where should we put our dollars?

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”

Where should we put our dollars?
Do we feel good about our food choices?
Animal welfare is a key to dairy sustainability

“Social license”
Do animal care practices align with societal values?

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

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
Animal **rights** activism can be a threat

**Goal:** convince consumers to avoid animal products

→ end animal agriculture

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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)
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.

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

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

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?

- **Approval**: NMPF Board of Directors (66%)
- **Recommendation**: NMPF Animal Health & Well-Being Committee (60%), NMPF Environmental Issues Committee (20%)
- **Guidance/Input & Ambassadors**: Farmer Advisory Council (100%)
- **Farmer Representation**: Farmer Advisory Council (100%)
**EVALUATORS AND VERIFIERS**

<table>
<thead>
<tr>
<th>REVIEW</th>
<th>OBSERVE</th>
<th>VERIFY</th>
<th>CREATE</th>
</tr>
</thead>
</table>
| • Records  
  • Documentation  
  • Written protocols | • Animals  
  • Facilities  
  • Employee actions | Observed actions are consistent with written records and protocols | Corrective action plans if certain standards are not met |

**Types of animal welfare measures**

<table>
<thead>
<tr>
<th>Outcome based</th>
<th>Input based</th>
</tr>
</thead>
<tbody>
<tr>
<td>Characteristics of:</td>
<td>animal</td>
</tr>
<tr>
<td>Provides info about:</td>
<td>animal’s state</td>
</tr>
<tr>
<td>Reflects welfare:</td>
<td>directly</td>
</tr>
</tbody>
</table>
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


“You manage what you measure”

Dr. Temple Grandin
Colorado State University
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 ≥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

<table>
<thead>
<tr>
<th></th>
<th>Signs of neglect</th>
<th>Hygiene</th>
<th>Low BCS</th>
<th>Lameness</th>
<th>Hocks, knees</th>
<th>Injured tails</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
<td>0</td>
<td>&lt;10%</td>
<td>&lt;1%</td>
<td>&lt;5%</td>
<td>&lt;5%</td>
<td>&lt;5%</td>
</tr>
<tr>
<td>Lactating cows</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Pre-weaned calves</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-weaned heifers</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-fresh cows &amp; heifers, dry cows</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital pen</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

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

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

http://www.paacodairywelfareauditortraining.com/
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

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

<table>
<thead>
<tr>
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<th>Low BCS</th>
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<th>Moderate Lameness*</th>
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**Data → motivates change → improves results**

Lameness prevalence decreased by a mean difference of -17% (range: -43 to +6%)

Data visualized with a graph showing lameness prevalence (%) over visits for different dairies.

Peer comparison vs. fixed targets/goals?

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

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

Audience poll at a dairy producer conference
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)?

- No, I meet the FARM and pro Action targets (<5 and <10%)
- No, I think 1.4% is already pretty low
- Yes, I want to be in the top half of farms
- Yes, I want to improve regardless of where I stand relative to others

Van Os, 2019 unpublished data

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Cooperatives and processors sign up to participate in one of three of the program areas on behalf of their member farms or patrons.

Subject matter experts, including farmers, draft science-based standards and best management practices then NMPF board of directors approves.

- 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?

- health
- feelings
- behavior

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.

Figure adapted from Fraser, et al. 1997. Animal Welfare 6:187-205
What is important for animal welfare?

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

failure (emotional) state
(+ vs – experience)

What is important for animal welfare?

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

ability to express behavioral adaptations
What is important for animal welfare?

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

feelings
emotional state
(+ vs – experience)

behavior
ability to express
behavioral adaptations

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

Provide opportunity for animals to express:

| What they prefer | What is important to them |

We gain insights into their needs

We can improve their welfare

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

What does relative preference tell us?

- Ranked choice among presented options
- Valence unknown

- Icing on the cake?
- Desirable vs. aversive?
- Lesser of two evils?
Example: Preferences for handling techniques

Standing quietly > Shouting and hitting

Shouting = Electric prod

Motivation: How much is it worth to them?

Ask animals to pay an increasing “price”:
- Push weights
- Press a button/lever repeatedly
- Navigate obstacles

Resource or behavior is important to the animal → Motivated to gain access / perform behavior → Willing to work harder to gain access / opportunity
Elasticity of demand

Price (heavier weights, more lever presses, etc.)

Willingness to pay the price

Inelastic demand: “essentials”
E.g., access to fresh feed when hungry (such as after a period of feed deprivation)

Elastic demand: “luxuries”
**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


![Diagram](data:image/png;base64,iVBORw0KGgoAAAANSUhEUgAAABQAAAAkCAYAAAA5ulC3AAAABGdBTUEAALGPC/xhBQAAAAF3JRC5R3L6F.png)
What should we conclude?

- Cows work hard to access pasture
- Pasture access is important to them
- They should be kept on pasture?

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

Preference for shelter magnified in hot weather

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

Shade

No shade

Sprinklers (no shade)


Cows prefer shade to being in the sun, even when cooled with (more effective) water sprinklers.

Avoid tradeoffs between important resources.


Preference for combining important resources

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

When sprinklers are mounted over feed bunks with shade, cows do prefer sprinklers, especially in warmer weather.

Ideally, offer cows freedom to express choices
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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 \textit{not} have a source for information on animal welfare.
- Of the remaining people who \textit{did} have a source:
  - Over 40% cited \textit{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.

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…”

Transparency is critical, but insufficient

knowledge about dairy production practices increased

(education worked to convey facts)

perceptions of dairy production practices did not necessarily improve

(education did not always improve attitudes)
Educational farm visit had variable effects on people’s perceptions of welfare

- 24% had improved perceptions of welfare
- 32% became more critical
- 44% had no change

Perceptions after farm visit improved when shared values were supported

- 24% had improved perceptions of welfare

Icons from the Noun Project

A good life means more than “just” health

“Good health is necessary, but insufficient”

Themes: restriction of movement, behavioral opportunities

Perceptions after farm visit worsened when other concerns were not satisfied

32% became more critical

not on the same page
How do we identify shared values?

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

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

To combat that threat, minimize weaknesses in animal care to remove their ammunition
Our research and extension program is supported by competitive funding and scholarships along with generous gifts and gifts-in-kind from:

USDA National Institute of Food & Agriculture, National Science Foundation, Research Forward, UW Consortium for Extension and Research in Agriculture and Natural Resources, National Cattlemen's Beef Association, USDA National Institute of Food & Agriculture, Wisconsin Dairy Innovation Hub, Dairy Research Partnership, Farrington Scholarship, James W. Crowley Fund, CALS Summer Internship Opportunities at Agricultural Research Stations, Generic Milk, Ag Environmental Resources (Summers), Zoos Corp., Novus International, Nielsen-Kellerman (Kestrel Instruments), Colum Co., Farnel Corp. (CALT), Ag Consulting (T.wil), Zoetis,

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www.DairyAnimalWelfare.org

Strengths
Weaknesses
Opportunities
Threats

SWOT

Internal
External

Assurance
Engagement

Benefits Harms

consumers / voters

producers

supply chain

Icons from The Noun Project