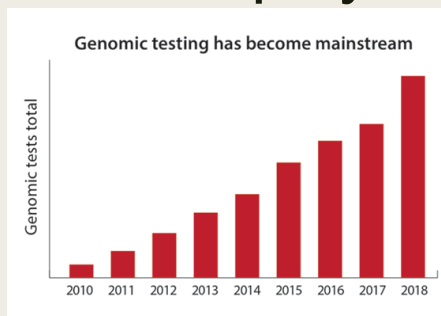


## Get Your Farm Groove Back

Corey Geiger  
 Managing Editor, Hoard's Dairyman  
 May 1, 2019  
 Grand Rapids, Michigan

25<sup>th</sup> Annual National Workshop for Dairy Economists and Policy Analysts  
 Recent innovations in milk production and marketing

## Groove makers: Dairy genetics are rapidly shifting



2010: 35,568 tests • 2014: 229,601 tests • 2018: 555,514 tests (Source: CDCB)

As of March 2019 3,124,844 genomic test have been run.

Groove making future — this will impact the way we market milk and dairy products.

**HOARD'S DAIRYMAN**

# Groove makers: How significant is genomic testing?

- Let's talk market impact . . .
  - There are 9.4 million cows in the U.S.
  - If half of all cows had heifers, that's 4.7 million heifer calves.
  - USDA agreed as it reported 4.7 million heifers over 500 pounds (225 kg).
- In 2014, 4.8 percent of all calves born had a genomic test run.
- In 2018, 11.8 percent of all calves born had a genomic test run.
- We instantly know 75 percent of that heifer calf's genetic potential at birth.
- Another metric — Genomic bulls, with no milk daughters, accounted for 75 percent of all active A.I. bulls in April 2019.

HOARD'S DAIRYMAN

# Groove makers: Genetics already has created new products

	Ref	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	GRA	
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Beta Casein

A2A2

A2A2

A2A2

A2A2

A1A2

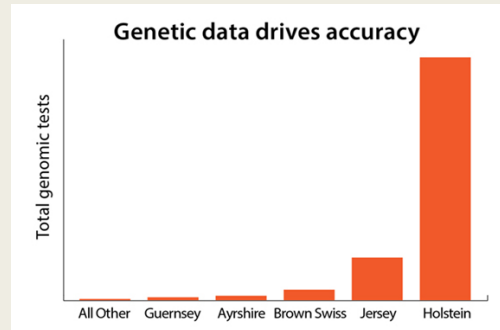
Beta casein testing helped created a new business — the a2 Milk Company.

What's the future?

Unlimited! • Milkfat has 400 different fatty acid profiles • Unique casein and whey proteins.

HOARD'S DAIRYMAN

## Groove makers: New dairy products will be driven by data



Data, and its accuracy, favors large breeds. (Source: CDCB)

March 2019: 3.1 million genomic tests have been run • 86.5 % Holstein • 11.7% Jersey

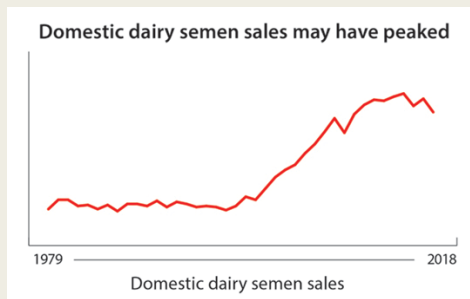
HOARD'S DAIRYMAN

## Groove makers: Planned replacements and culls

- We no longer need every heifer calf.
  - Top three costs on farms are: feed, labor, and replacements.
  - There's really only one way to lower those costs — less replacements.
- Groove changing paradigm shift with Dairy Cattle Reproduction Council (DCRC) . . .
  - 20 percent pregnancy rates considered elite DCRC entries in 2008.
  - 30 percent pregnancy rates don't even get to second round in 2018.
  - 40 to 50 percent pregnancy rates for DCRC Platinum and Gold Herds in 2018.
- Sexed semen stands second to improved pregnancy rates.
  - Semen to create heifer calves introduced in 2003.
  - Creates 90-plus percent heifer calves.

HOARD'S DAIRYMAN

## Groove makers: Domestic dairy semen sales at 8-year low



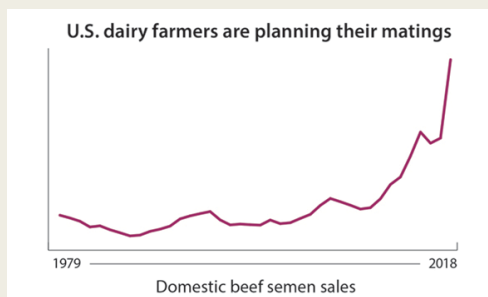
2010: 21.6 million units

2018: 21.8 million units

(Source: NAAB)

**HOARD'S DAIRYMAN**

## Groove makers: Domestic beef semen sales up 59 percent!



These beef sales are to dairy farmers, not beef ranchers.

2017: 2.5 million units

2018: 4.0 million units

**HOARD'S DAIRYMAN**



## Groove makers: There's a good reason for planned beef

513 North 6th Reedsville, WI 54230		675 Green Bay Rd Apt 12 Denmark, WI 54208		Check #: 05220608 THANK YOU FOR YOUR PATRONAGE!		
Tag#	Head Animal	Desc	Avg Wt	Buyer Ticket Weight	Price	Amount
7564	1 Calf-Replac	DAI	115	390-6 000497	115	10.00C
Total Hd: 1 Sold Hd: 1 Sold Lbs: 115 lbs						\$11.50
Adjustments						
Association						\$0.00 Beef Promo
Finance						\$0.02 TRK-Four Star Trucking
Commission						\$5.24 Yardage
						\$0.00

*After deductions, no value*

In addition to low milk prices, dairy farmers are getting \$0 bull calf checks

**HOARD'S DAIRYMAN**

## Groove makers: The world believes in U.S. genetics



World competition continues to grow. U.S. farmers must keep grooving.  
International semen sales topped 22 million units for second straight year.  
The 24.6 million units for 2018 topped domestic sales — an industry first.

**HOARD'S DAIRYMAN**

## Getting Your Groove Back Takes Planning



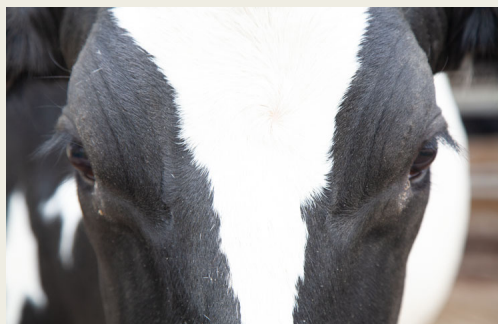
In 2000, Knigge Farms installed robots — the first in the United States.

120 milk cows • 20 dry cows • 120 replacements • 600 acres

2.5 worker equivalents

**HOARD'S DAIRYMAN**

## Groove makers: Milking equipment will change farm labor



Not only will we reduce labor costs . . . we keep cows grooving.

Let's look at some robot data from Knigge Farms.

**HOARD'S DAIRYMAN**

## Groove makers: Data will keep cows grooving



Oh my, No. 139 doesn't look good!

*That came from the computer monitor.*

*The eyeball test confirmed it.*

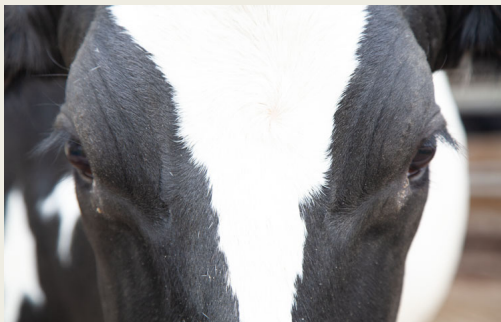
No. 139 calved on February 12.

The only positive vital sign on May 25:

*Somatic cell count at 20,000 cell per ml*

HOARD'S DAIRYMAN

## Groove makers: Data will keep cows grooving



May 25

Milk:	45 pounds
Weight:	1,153 lbs.
Rumination:	400 minutes

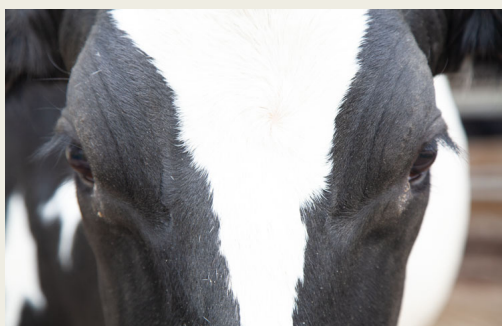
The solution?

Rerun her through fresh cow protocols.

Cost less than \$20. No antibiotics.

HOARD'S DAIRYMAN

## Groove makers: Data will keep cows grooving



	<u>May 25</u>	<u>June 10</u>
Milk:	45 pounds	71 lbs.
Weight:	1,153 lbs.	1,321 lbs.
Rumination:	400 minutes	550 min.

Marked improvement in 16 days!  
Cost less than \$20. No antibiotics.

**HOARD'S DAIRYMAN**

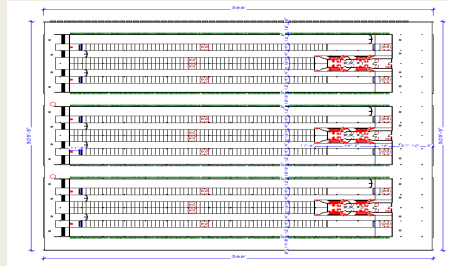
## Groove makers: Milking equipment changes farm labor



Farms are moving from two robots like Knigges and larger.  
Robots have resale value compared to conventional parlors.  
"I prepaid my labor," said Pete Knigge when starting out in 2000.

**HOARD'S DAIRYMAN**

## Groove makers: Milking equipment changes farm labor



Bos Dairy, Fair Oaks, Indiana – Lely robots.

Green Valley Dairy, Pulaski, Wisconsin – 12 DeLaval robots.

A few herds with over 1,000 cows. Largest internationally is 4,000 cows. (Source Brouk).

Robotic boxes still have 2 to 4 percent market share, but rapidly shifting.

**HOARD'S DAIRYMAN**

## Groove makers: Robotic rotaries will be a slow go in U.S.



With U.S. rotary parlors, it's all about time and throughput.

Conventional rotary parlors have 5-second entry times per cow — 720 cows per hour.

Robotic rotary parlors have 8- to 10-second entry times per cow — 450 to 360 cows per hour.

**HOARD'S DAIRYMAN**



## Groove makers: Cow care will become like a video game



In the future, farmers will be grooving with augmented reality.

HOARD'S DAIRYMAN

## Groove makers: Cow care will become a one person game



HOARD'S DAIRYMAN

## Groove makers: NEDAP is leading innovation



Customers include . . .

GEA

Lely

BouMatic

AMS Galaxy

Alta Genetics and URUS

CRV Genetics

Semex (Canada)

Secure the Eiffel Tower

Costco, Target, and Aldi

**HOARD'S DAIRYMAN**

## Groove shakers: One-hour interviews with 30 dairy owners

- Great cross-section of states (listed in milk production order):
  - California (3 herds), Wisconsin (7 herds), New York (5 herds),
  - Texas (2 herds), New Mexico (2 herds), Washington (1 herd), Ohio (1 herd),
  - Arizona (1 herd), Vermont (1 herd), South Dakota (2 herds),
  - Oregon (1 herd), Utah (1 herd), Missouri (1 herd), and Nevada (1 herd).
- 14 states in all.
- 3,433 average herd size.
- Interviews conducted in December 2016.
- 80 percent of interviews done by yours truly.

**HOARD'S DAIRYMAN**

## Groove shakers: What keeps you up at night?

Open-ended question: “What are three challenges that will impact your dairy and the greater dairy industry over the next three to five years?”

Three top-level concerns mentioned by 20 of the 30 producers . . .

- Labor (20 comments; 12 first mentions; 4 second mentions; 4 third mentions).
  - “It’s agriculture’s No. 1 challenge.”
  - “You can overcome all other obstacles, but good help is critical.”
  - “Our ability to source and train high-quality people will dictate our future.”
  - Immigration, labor-saving robot technology were frequent mentions.

HOARD'S DAIRYMAN

## Groove shakers: What keeps you up at night?

Open-ended question: “What are three challenges that will impact your dairy and the greater dairy industry over the next three to five years?”

Three top-level concerns mentioned by 20 of the 30 producers . . .

- Environmental regulations (20 comments; 5 first mentions; 10 second; 5 third).
  - “The government has its fingers in everything farmers do.”
  - “Nutrient handling and disposal, both solids and liquids, need our constant attention.”
  - “Clean water, clean air, and soil sampling remain on the forefront.”
  - “Our ability to compete in a worldwide marketplace will be greatly affected by regulations.”

HOARD'S DAIRYMAN



## Groove shakers: What keeps you up at night?

Open-ended question: “What are three challenges that will impact your dairy and the greater dairy industry over the next three to five years?”

Three top-level concerns mentioned by 20 of the 30 producers . . .

- Economics (20 comments; 5 first mentions; 7 second; 8 third).
  - “Market pressure forces us to get better and better just to stay in business.”
  - Topping the word cloud: Profitability, volatility, milk price, and cash flow.
  - Additional comments: Meeting milk-buyer expectations and requirements, capturing value from all milk components, and finding adequate processing capacity.

HOARD'S DAIRYMAN

## Groove shakers: What keeps you up at night?

Open-ended question: “What are three challenges that will impact your dairy and the greater dairy industry over the next three to five years?”

Tier two — four mid-level concerns from the 30 producers . . .

- Consumer perceptions (10 comments; 3 first mentions; 1 second; 6 third).
  - “Connection to the consumer, as customers are becoming much more involved with how their food is produced.”
  - “How does dairy share its message to impact consumer’s perception?”

HOARD'S DAIRYMAN

## Groove shakers: What keeps you up at night?

Open-ended question: “What are three challenges that will impact your dairy and the greater dairy industry over the next three to five years?”

Tier two — four mid-level concerns from the 30 producers . . .

- Neighbor relations (7 comments; 2 first mentions; 4 second; 1 third).
  - “We must be willing to discuss environmental impact.”
  - “Nonfarm neighbors seem willing to point their finger at farms as being the problem, and nobody else is part of the equation.”

HOARD'S DAIRYMAN

## Groove shakers: What keeps you up at night?

Open-ended question: “What are three challenges that will impact your dairy and the greater dairy industry over the next three to five years?”

Tier two — four mid-level concerns from the 30 producers . . .

- Technology tools (6 comments; 2 first mentions; 2 second; 2 third).
  - “We are adjusting to not using BST in our herd due to our milk market.”
  - “The GMO topic just doesn't go away.”
  - “We are growing in our concern about companies marketing GMO-free products. What's next?”

HOARD'S DAIRYMAN

## Groove shakers: What keeps you up at night?

Open-ended question: “What are three challenges that will impact your dairy and the greater dairy industry over the next three to five years?”

Tier two — four mid-level concerns from the 30 producers . . .

- Animal care and activists (6 comments; 1 first mentions; 2 second; 3 third).
  - “Anti-animal activist organizations remain a concern.”
  - “Anti-animal messages eventually impact all consumers.”

HOARD'S DAIRYMAN

## Get Your Farm Groove Back

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25<sup>th</sup> Annual National Workshop for Dairy Economists and Policy Analysts  
Recent innovations in milk production and marketing