USDA Agricultural Research Service
U.S. DEPARTMENT OF AGRICULTURE

PROPOSING A NEW U.S. DAIRY HERD SUSTAINABILITY METRICS PLATFORM

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USDA

CDCB
COUNCIL ON DAIRY CATTLE BREEDING

DRMS
DAIRY RECORDS MANAGEMENT SYSTEMS

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BUILDING ON ICAR EFFORTS

ICAR THE GLOBAL STANDARD FOR LIVESTOCK DATA

Farm sustainability covers many areas: energy use, water use, soil health, animal health, production, etc.

ICAR has focused on information collected through milk recording as it relates to sustainability.

Quantitative measures that directly relate to agriculture sustainability are preferable to qualitative measures

Developed a list of 43 key traits and standardized calculations on how these traits can be calculated.

https://www.icar.org/index.php/technical-bodies/task-forces/sustainability-task-force/

PROOF OF CONCEPT

Data Supplied from U.S. Records Processing Centers

DRMS DAIRY RECORDS MANAGEMENT SYSTEMS

amelicor

AgSource DAIRY

AGRITECH ANALYTICS
Your Choice for Exceptional Dairy Records

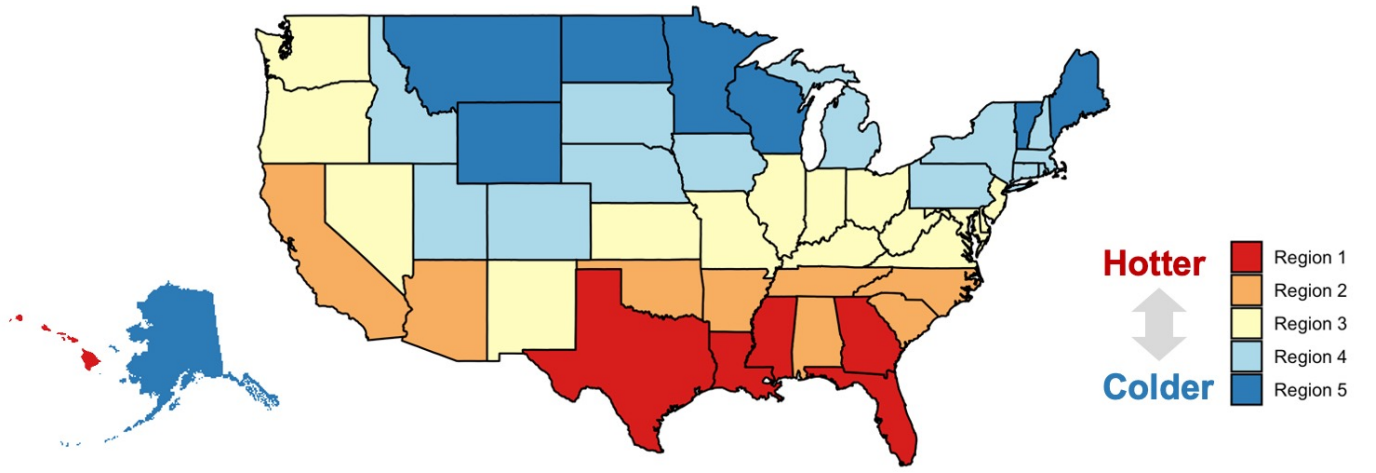
ICAR SUSTAINABILITY TASK FORCE TRAIT CATEGORIES

FEEDING & PRODUCTION	FERTILITY	HEALTH	LONGEVITY	YOUNG STOCK
AVG DIM	**AVG CALVING INTERVAL**	**AVG SCC**	**AVG CULLING AGE**	**AVG AGE FIRST CALVING**
N = 10,003	**N = 9,905**	**N = 9,830**	**N = 10,041**	**N = 10,095**

DEFINING PEER GROUPS

Three Strata Capture Varied U.S. Systems

REGION



MAJOR DAIRY BREEDS

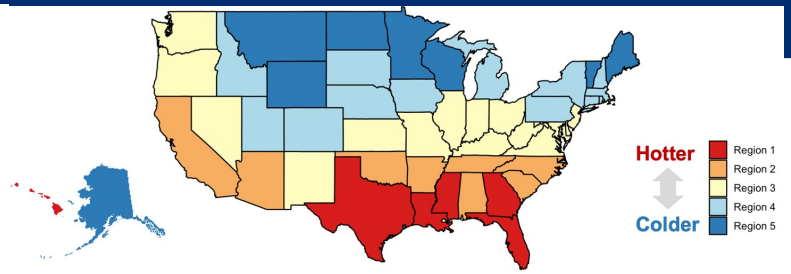
Holstein
Jersey
Brown Swiss
Ayrshire
Guernsey
Milking Shorthorn

SIZE

< 250 **> 1000**

HERD DEMOGRAPHICS

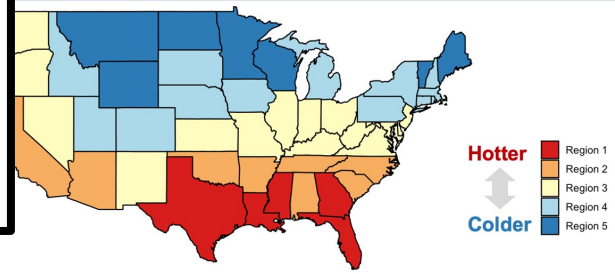
S < 250
M 250 – 999
L 1000+

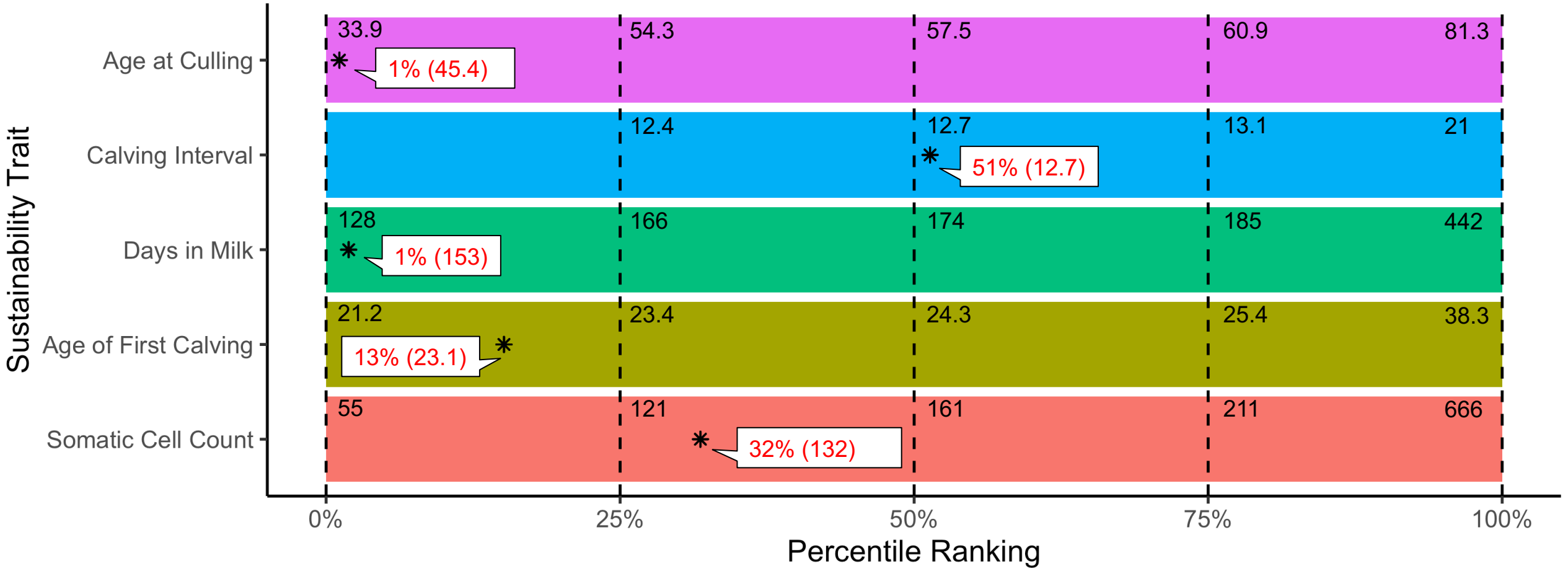


	R1			R2			R3			R4			R5		
	S	M	L	S	M	L	S	M	L	S	M	L	S	M	L
AY							7			22			14		
BS				4			30			23	3		33	4	
DL										2					
FL													1	2	
GU	1						7			17	1		26	2	
HO	46	34	19	61	68	206	900	193	55	3248	**443**	213	1938	629	165
JE	6	2	3	28	18	34	108	18	3	131	18	7	105	15	4
MS				1			1			2			4		
WW													3		
XB							1								
XD						4				1			1		
XX	20	17	14	34	8	24	208	26	11	407	51	18	302	41	11

EXAMPLE: PERCENTILES

Example Herd:
Holstein
Medium (250 – 999)
Region 4
Peer Group = 443 herds





EXAMPLE: SCC

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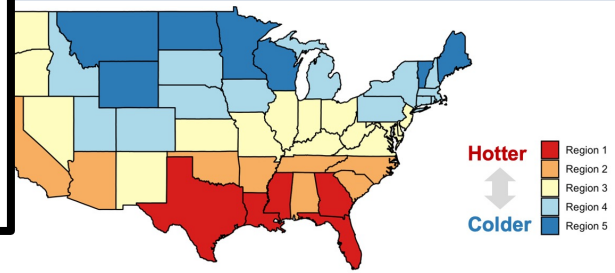
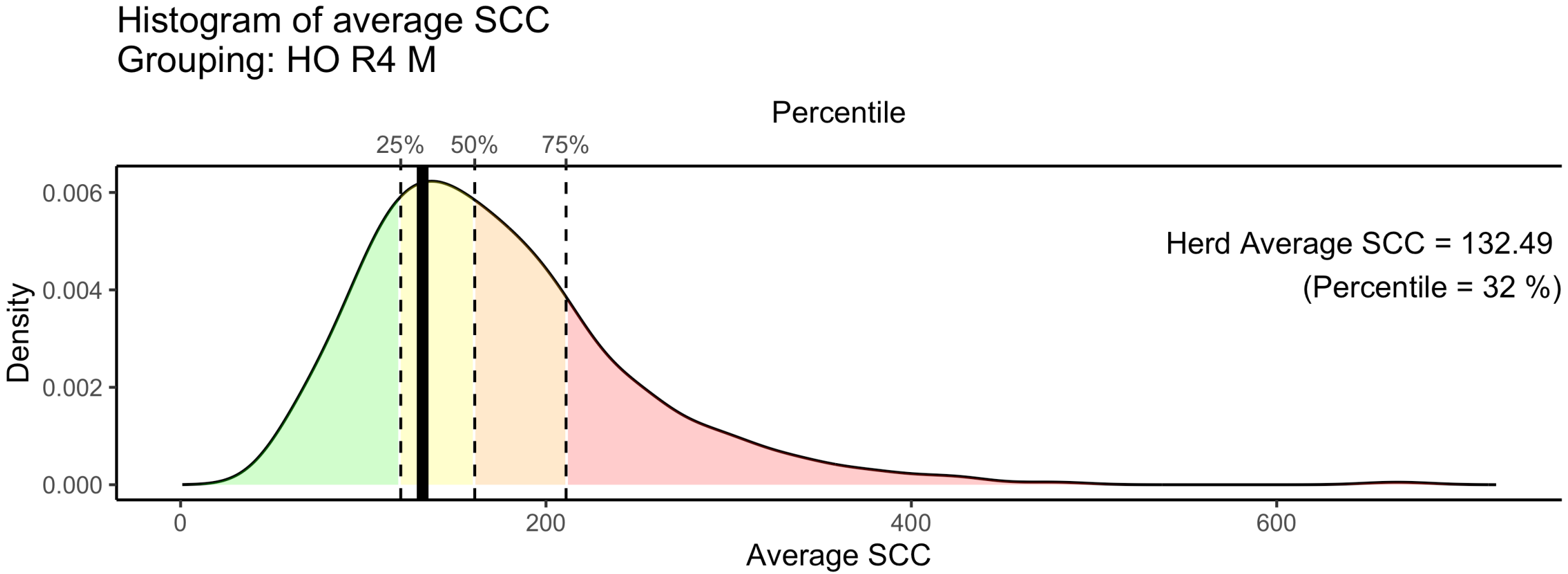


Curve Shaded by Percentiles



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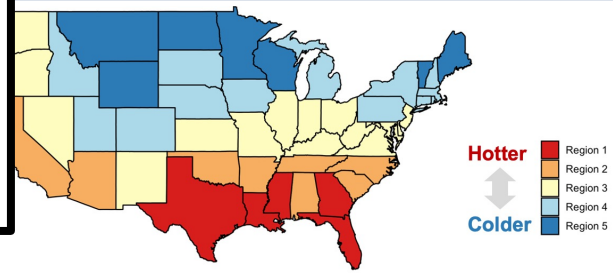
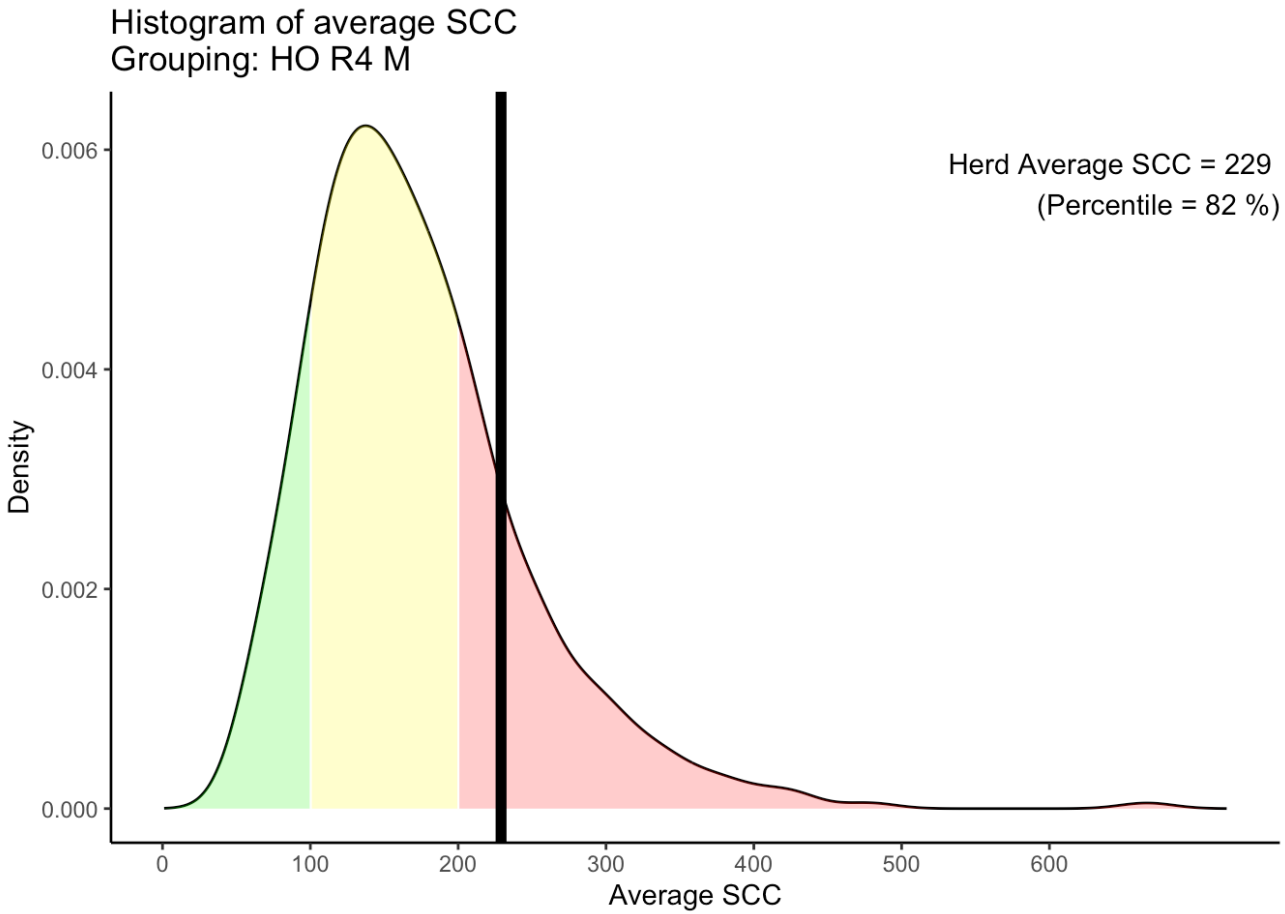


Curve Shaded by Ranges of Actual Values



Percentile rankings are limited because someone must be last – even if their actual value is perfectly acceptable!

EXAMPLE: CI

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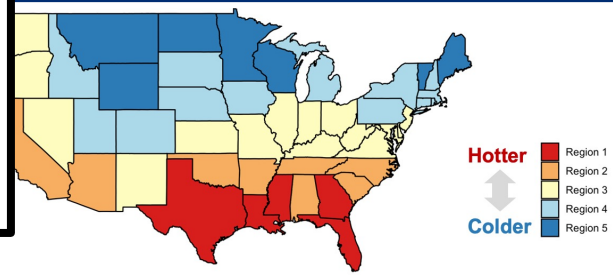

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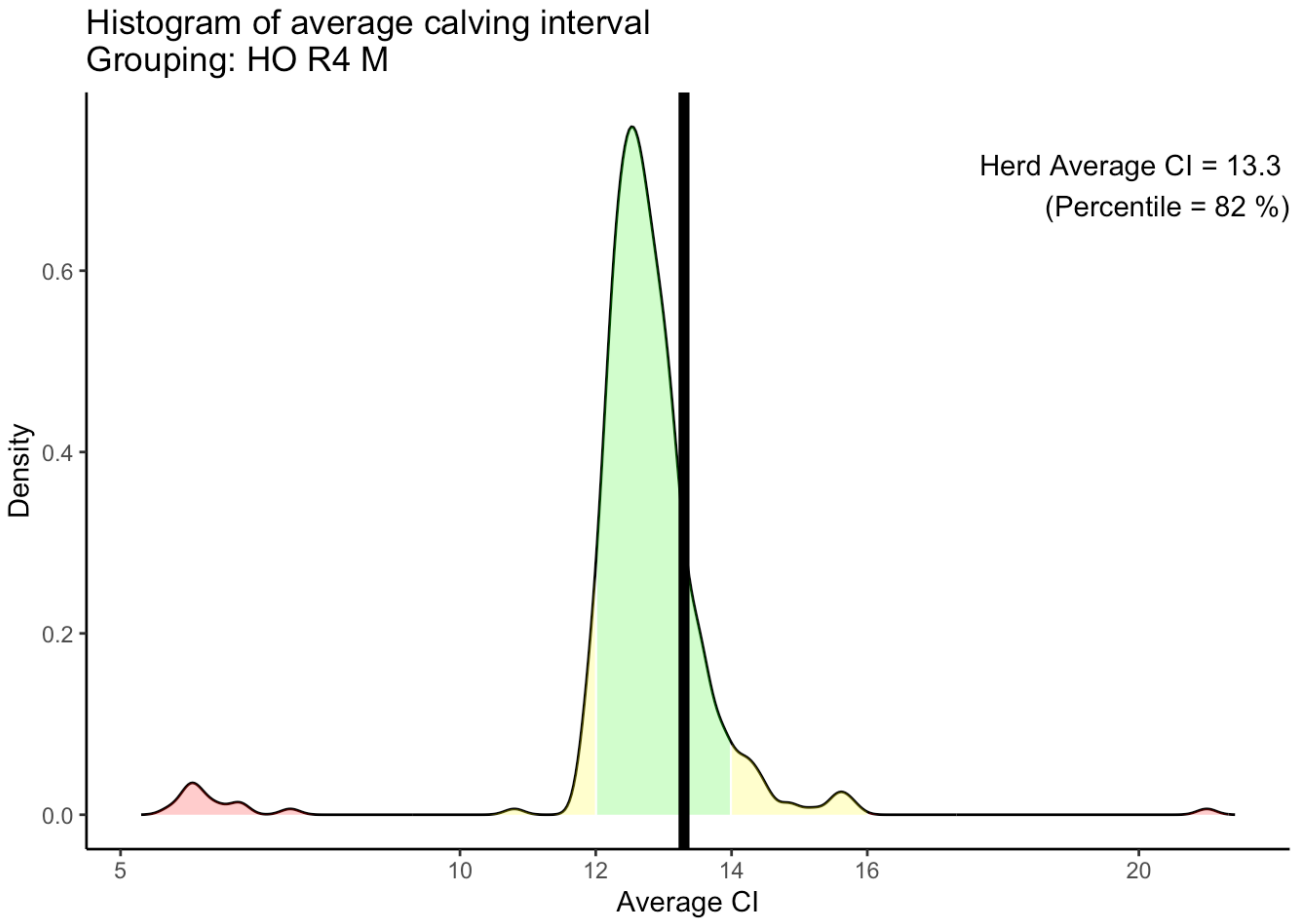
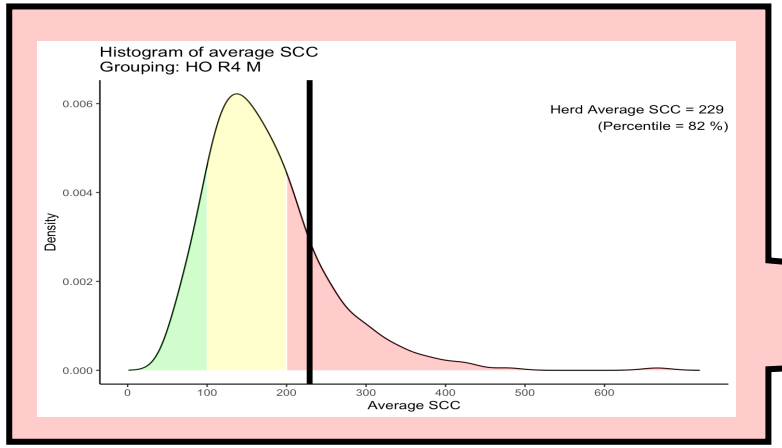


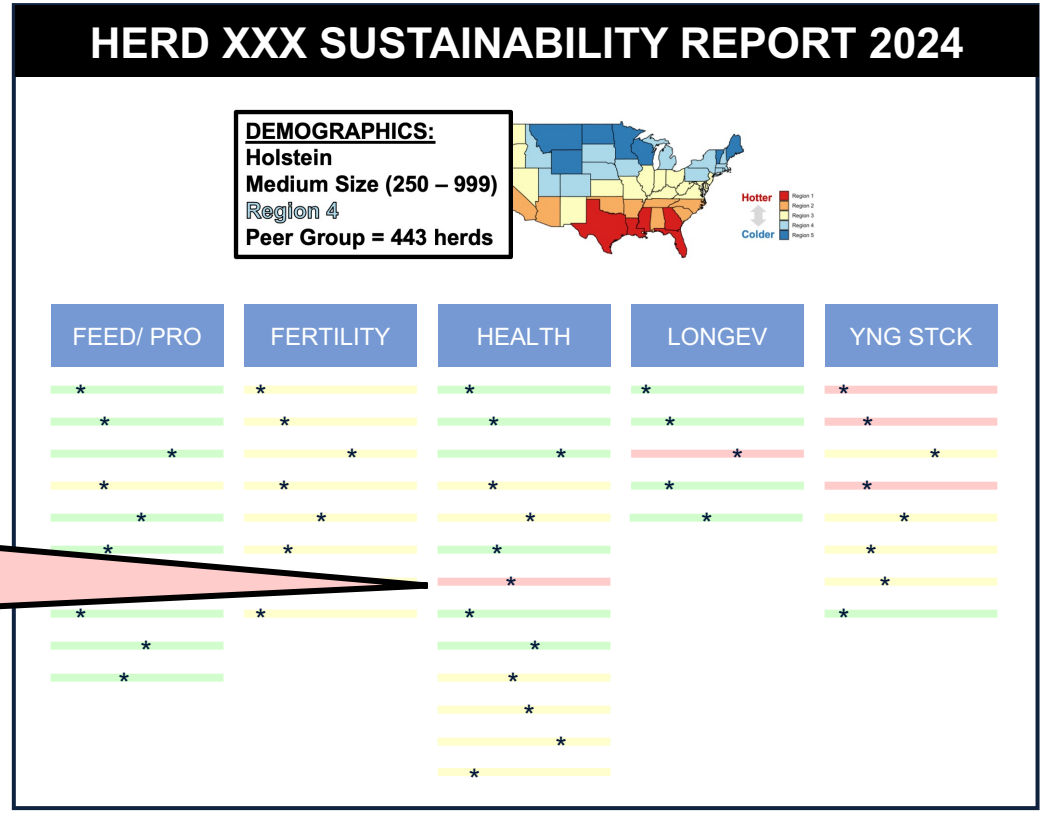
The next challenge is industry consensus on optimal values for each trait

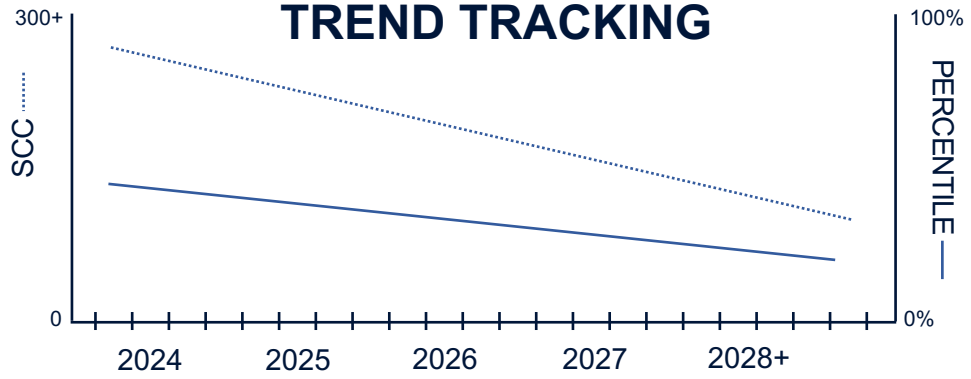
WEB-BASED APPLICATION

Confidential analysis; accessed privately by owners



CLICK TO LEARN MORE!





EXPANDING TO OTHER TRAITS

Relative Ease of Implementation

EASY

- Energy Corrected Milk
- Days Open
- 1st Service Conception Rate
- Lactation Number
- Young Stock EBV Ranking
- Young Stock Sire EBV Ranking
- % Calves Born Dead

MEDIUM

- Milk Urea Nitrogen Rates
- % Cows Culled (Reproductive)
- % Cows Fertility Disorders
- Chronic Infection Rate
- Dry Cow Cure Rate
- Fresh Cow Infection Rate
- % Cows Culled (Udder Health)
- % Cows Culled (Lameness)
- % Cows Culled (Other)
- % Cows FPR < 1 @ 1st Test Day
- % Cows FPR >1.3/1.5 @ 1st Test Day
- % Cows with Lameness
- % Cows with Mastitis
- % Cows with Subclinical Metabolic
- Daily Production of Culled Animals
- Lifetime Production of Culled Animals
- % Died at <60 DIM
- % Female Young Stock Involuntary Culled
- % Female Calves (Diarrhea)
- % Female Calves (Respiratory Disease)

HARD

- Apparent Pregnancy Loss Rate
- Pregnancy Rate

NO DATA

Age at slaughter (beef), Body Weight, Daily Gain, Dry Matter Intake, Feed Efficiency, Methane Emissions, % Cows with Functional BCS, Non-return Rate 56 d, Selective Dry Cow Therapy Rate

One of the last coal-powered sheep.
Most sheep are all electric now.

Dairy producers need a seat at the table

THE BOTTOM LINE

- ICAR has defined 43 traits related to dairy sustainability
- We can leverage DHI data to quantify these traits at the herd level and track progress over time
- These metrics (provided confidentially to each herd) would be a tool that empowers producers to advocate for their operation in sustainability conversations