



**VikingGenetics -  
innovative breeding**

# The unique registration system in NAV

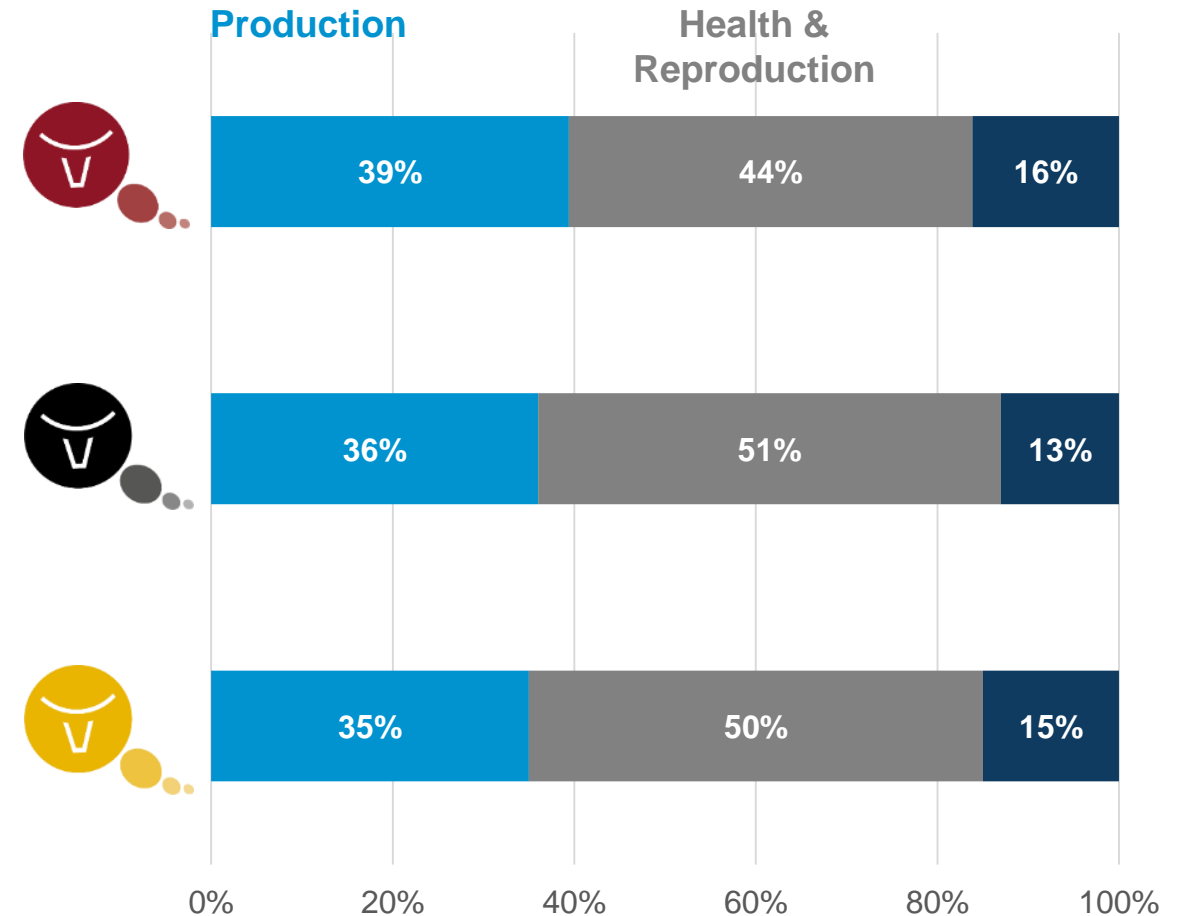
Claus Langdahl

Senior Breeding Manager VikingHolstein



# NTM - Nordic Total Merit

- The most complete index in the world
- Combining 90 sub-indices into 14 main traits
- All traits in NTM are economically important
- Weights in NTM are scientifically based
- Direct selection for clinical mastitis and other health traits based on veterinary registrations
- Unique index for hoof health
- Functional conformation that works for milk production



# Average yield, 305 days, 2019

Average for the first 3 lactations	Milk kg	Fat kg	Fat %	Prot. kg	Prot. %	Kg ECM
VikingHolstein	11,011	440	4.00	373	3.39	10,993
VikingRed	9,627	419	4.35	338	3.51	10,121
VikingJersey	7,407	439	5.93	310	4.19	9,595

Source: NAV





# High quality data



Each cow has a unique ID



90% of Nordic cows recorded



All data recorded in  
one database



Data available from different  
production systems at all  
management levels



Strict veterinary rules



Continuous improvement and  
development of data collection  
system

# Registration system in the Nordic countries

✓ Veterinarians



✓ Hoof trimmers



✓ AI technicians



✓ Classifiers



✓ Farmers



**DATA FROM DIFFERENT SOURCES  
COLLATED INTO ONE DATABASE**

✓ AMS system



✓ Milk recording & Slaughterhouses



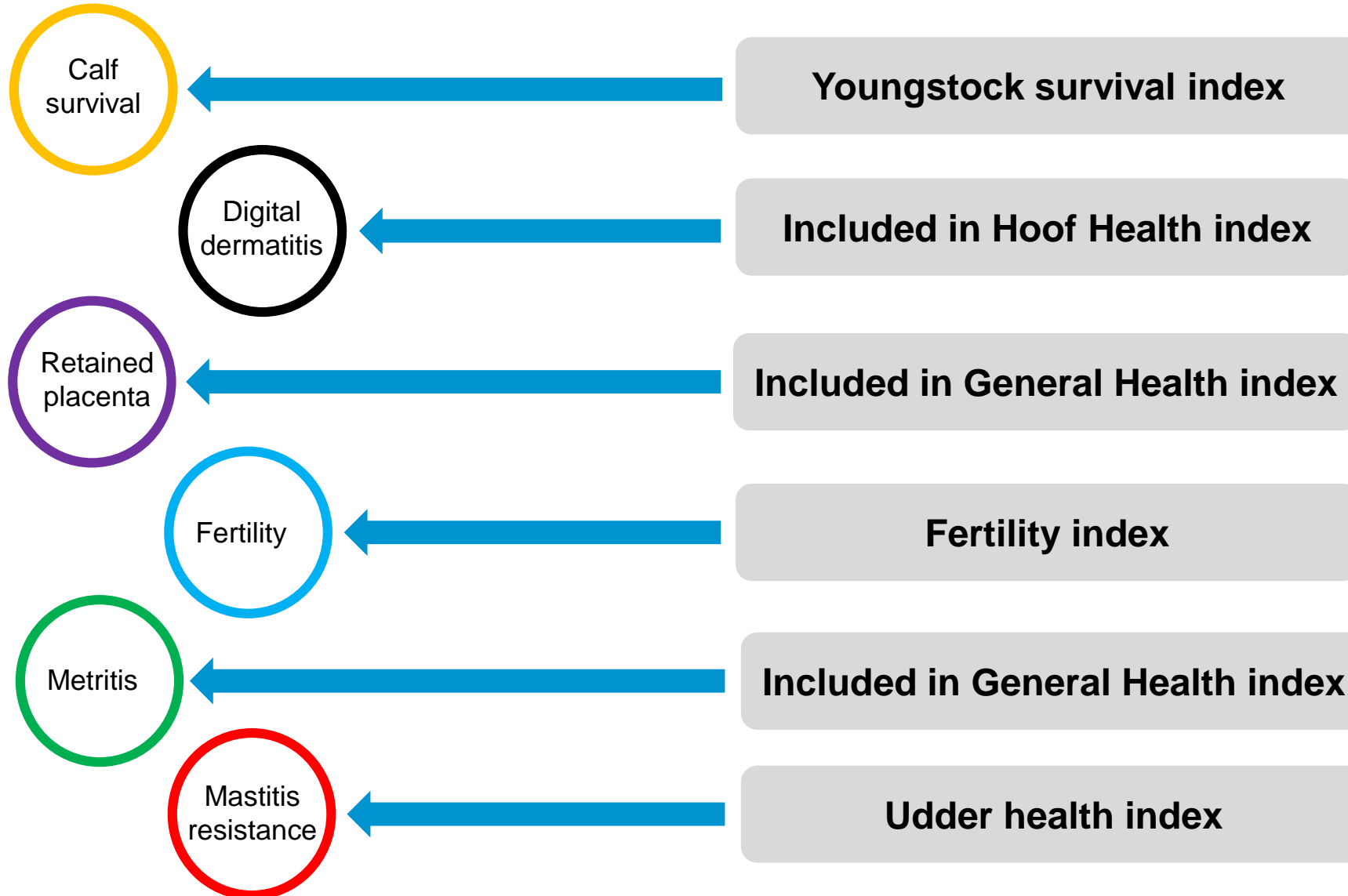
# Direct selection is more reliable

- The correlation between somatic cell count (SCC) and clinical mastitis is 0.6.
- However, it is not the same trait.
- The correlation between the "feet & leg" conformation index and hoof health is only 0.16 (Holstein)
- However, it is not the same trait



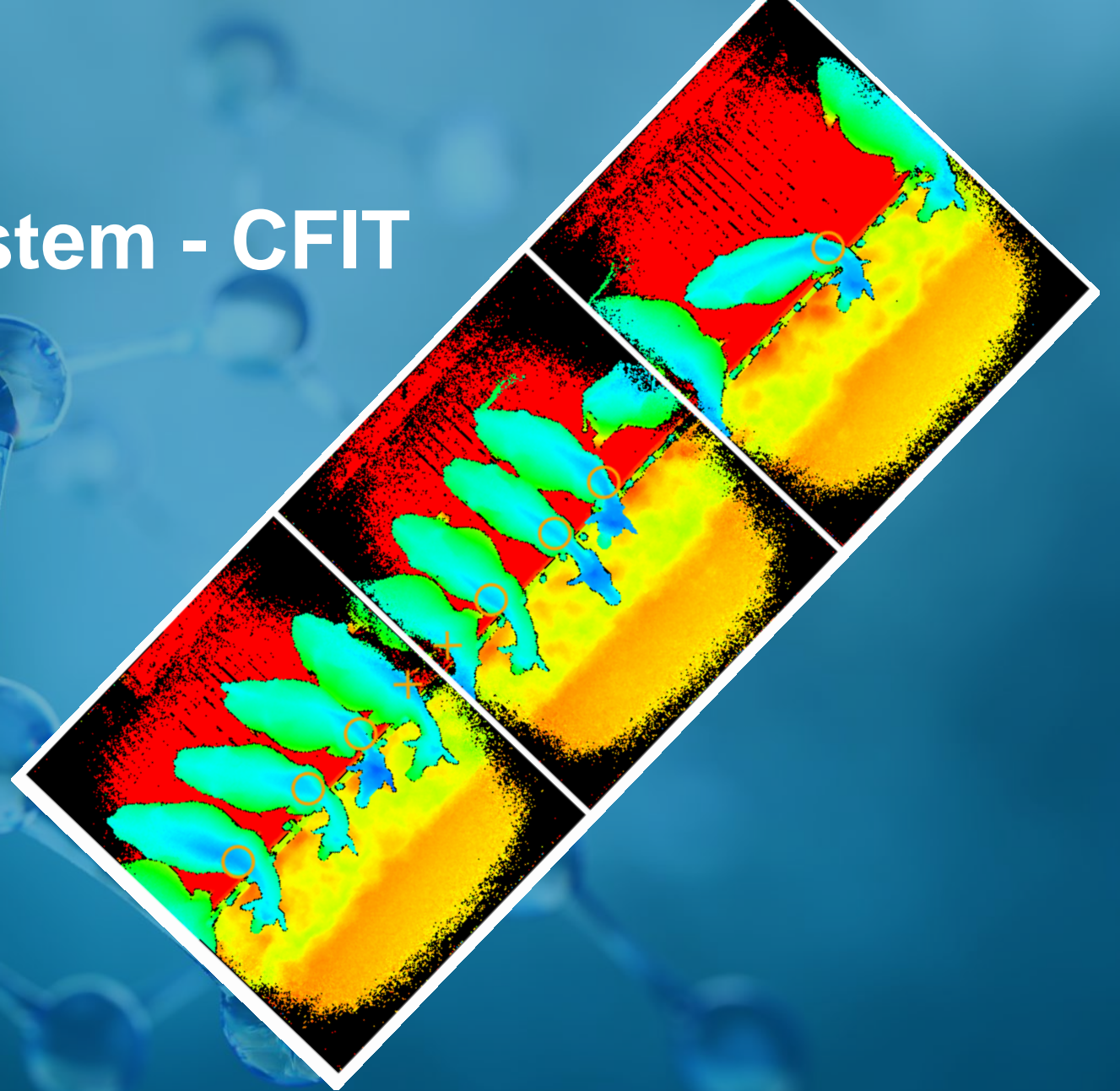
*Source: NAV, Nordic Cattle Genetic Evaluation*

# Direct selection for several traits



# Cattle Feed Intake System - CFIT

measuring individual feed intake  
in commercial herds using 3D  
camera technology





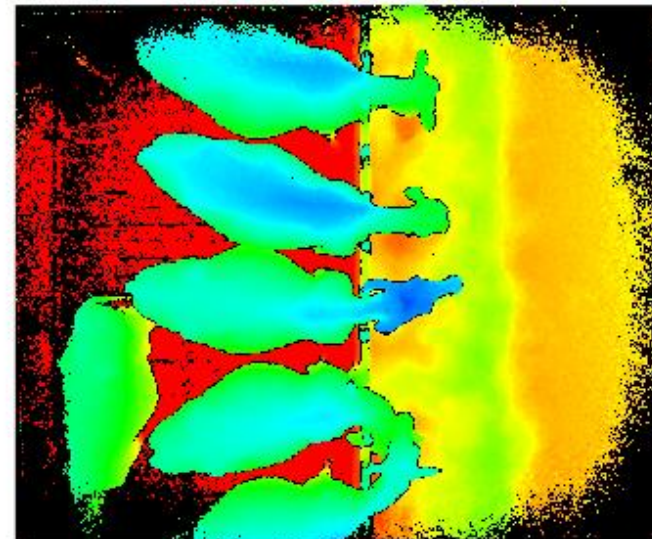
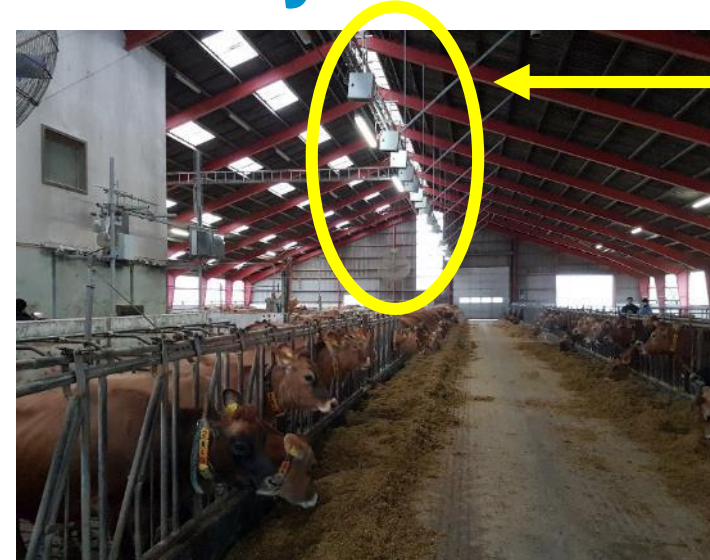
# 3D system for feed intake in dairy cattle

## Identification

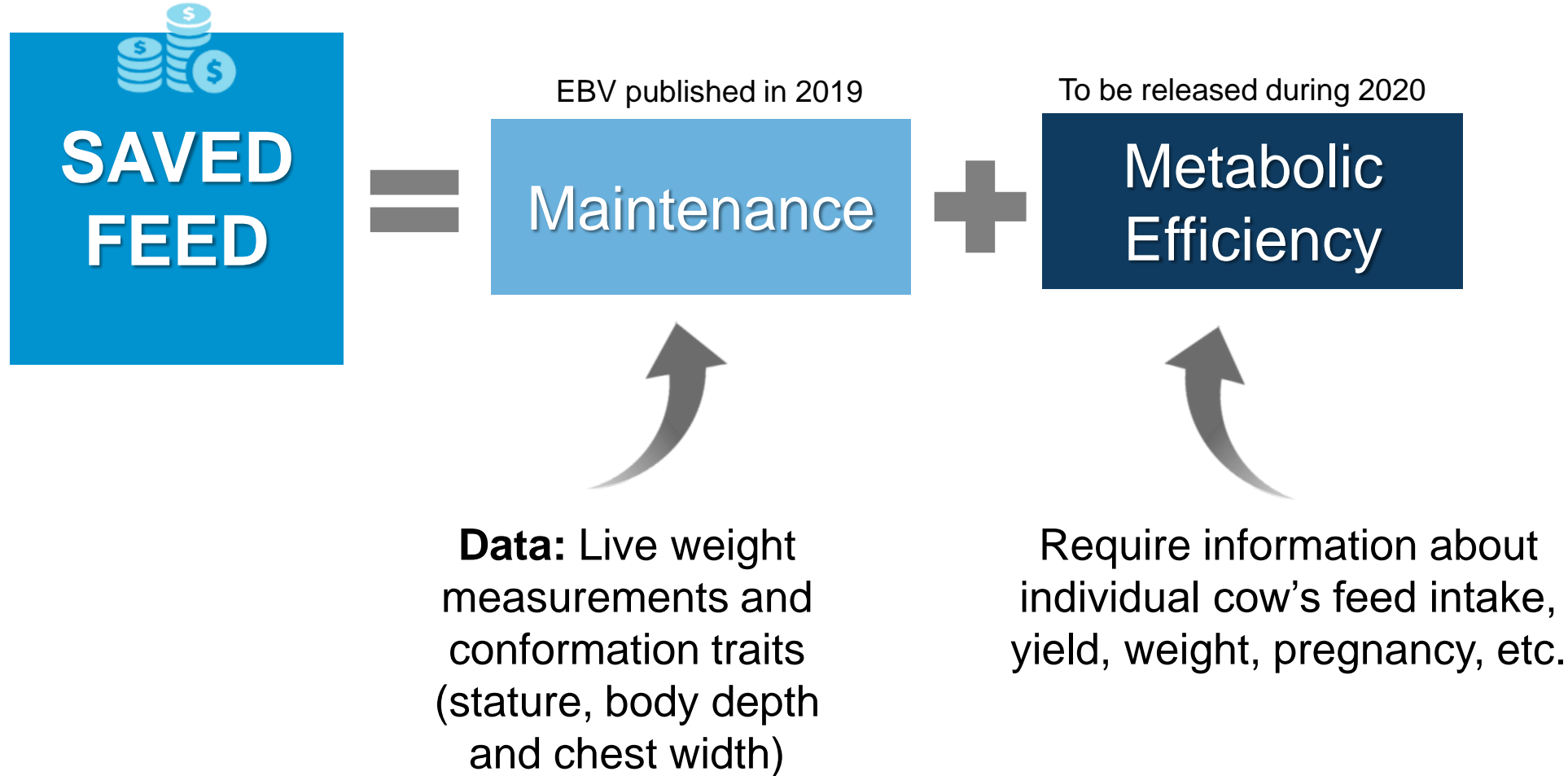
Contours of the back are used to identify cows

## Feed intake

Changes in volume during visits are used to quantify feed intake

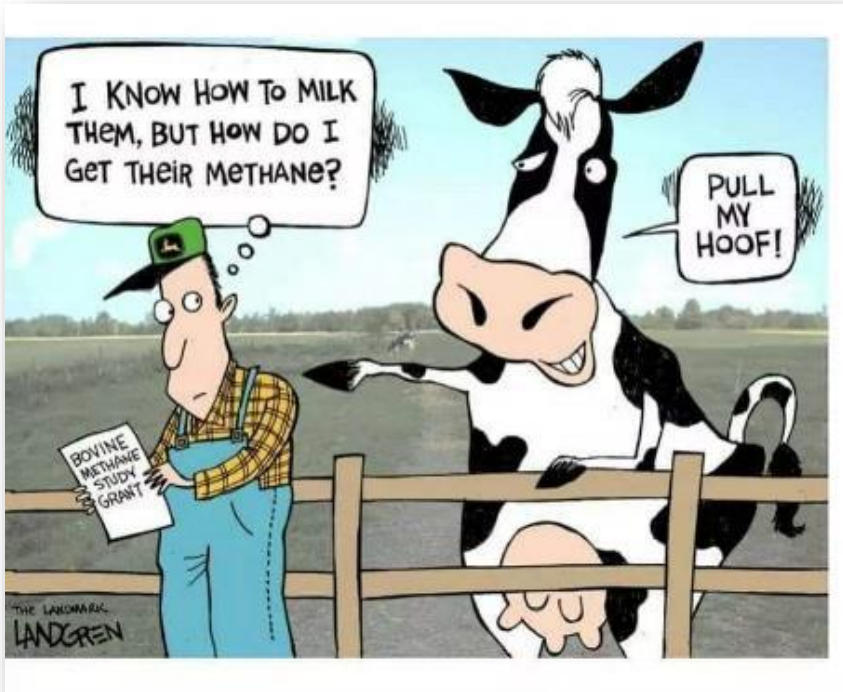


# Saved feed index



# Methane

-  Largest world-wide amount of **data**





# Unique Youngstock survival index

- Youngstock survival is the newest index in NTM - introduced in 2016
- The index describes the genetic potential for survival in youngstock
- YSS includes breeding values registered separately for male and heifer calves for:
  - early rearing period (first month)
  - late rearing period (up to six months for male calves and 15 months for heifers)







## Healthy, efficient cows

- VikingHolsteins are **medium-sized cows** that are **feed-efficient** and produce **high levels of milk and solids**
- Because of their **natural health**, VikingHolstein cows have **excellent fertility**. They also **calve easily**
- VikingHolsteins are **resilient cows** that are easy to manage and with **great genetic diversity**



# VikingHolstein

Give you **high lifetime production** and **daily profit per cow**

Makes your dairy business **profitable**, **sustainable** and **enjoyable**



## Healthy

Excellent health and  
reproduction



## High producing

High lifetime production  
of milk and solids



## Resilient

Great genetic diversity –  
long-lasting cows



## Efficient

Medium-sized cows –  
easy to manage

# VikingHolstein

## VikingHolstein 2020

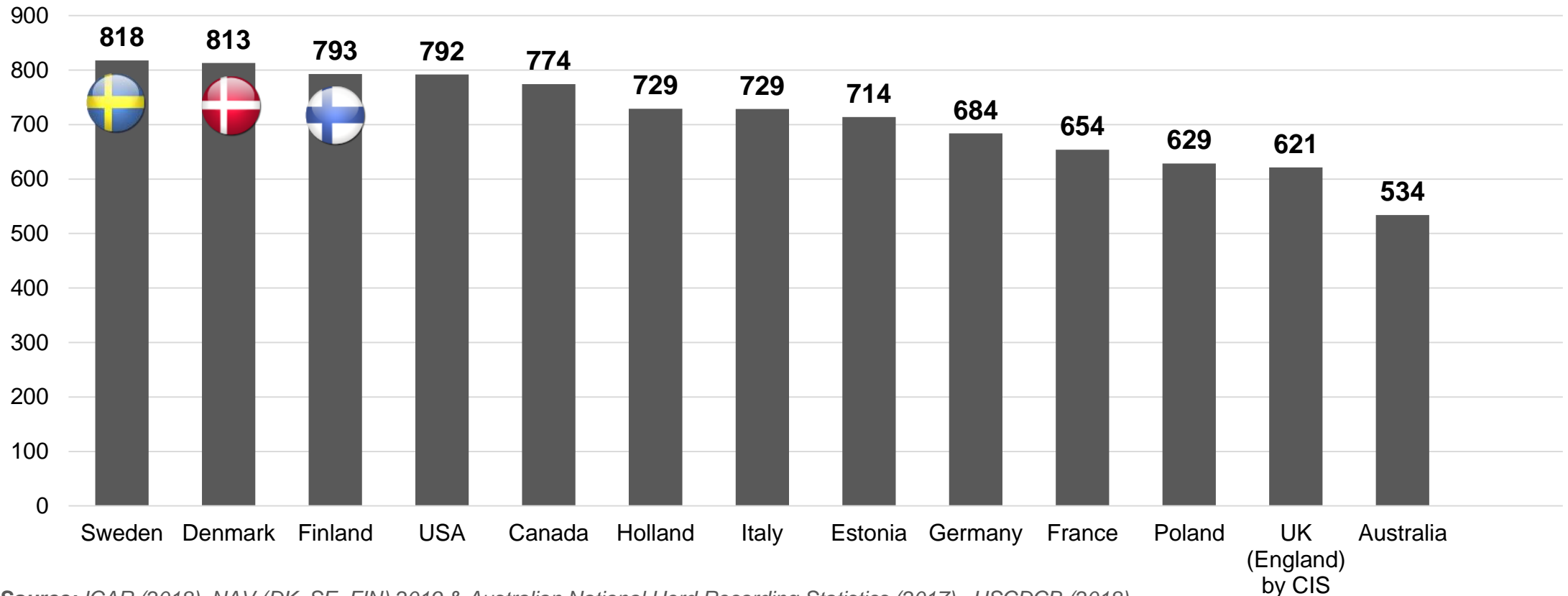
No. cows	<b>596,000</b> (DNK, SWE, FIN)
Milk (305 days)	<b>11,011 kg</b> / 10,993 kg ECM
Fat kg	<b>440 kg</b>
Fat %	<b>4.00 %</b>
Protein kg	<b>373 kg</b>
Protein %	<b>3.39 %</b>
Fat + Protein kg	<b>813 kg</b>

NAV January 2020



# Kg fat + protein, 305 days - Holstein

fat + protein kg - Holstein 305 days, all registered cows



Source: ICAR (2018), NAV (DK, SE, FIN) 2019 & Australian National Herd Recording Statistics (2017), USCDCB (2018)



# 5 most common reasons for culling













Holstein, Denmark

Reason for culling	% from culled per year
Poor fertility	20.9%
Low yield	19.3%
Hoof, F&L problems	13.6%
Too high SCC	11.1%
Udder and teats characteristics	6.6%

Source: SEGES Denmark (2018)















# Interbull ranking - Holstein

	Production index 	Fat index 	Protein index 	Frame 
	<b>106</b>	<b>105</b>	<b>106</b>	<b>103</b>
	<b>108</b>	<b>110</b>	<b>106</b>	<b>113</b>
	<b>107</b>	<b>109</b>	<b>106</b>	<b>117</b>
	<b>104</b>	<b>105</b>	<b>104</b>	<b>110</b>
	<b>107</b>	<b>107</b>	<b>107</b>	<b>112</b>
	<b>103</b>	<b>103</b>	<b>103</b>	<b>116</b>
	<b>104</b>	<b>107</b>	<b>102</b>	<b>113</b>
	<b>98</b>	<b>100</b>	<b>96</b>	<b>110</b>

VikingHolsteins are **medium-sized cows** that are **feed-efficient** and produce **high levels of milk and solids**

# Interbull ranking - Holstein

	 Udder health	 Daughter Fertility	 Calving direct <sup>D</sup>	 Calving maternal <sup>M</sup>
	<b>102</b>	<b>102</b>	<b>102</b>	<b>103</b>
	<b>100</b>	<b>98</b>	<b>99</b>	<b>102</b>
	<b>98</b>	<b>95</b>	<b>98</b>	<b>100</b>
	<b>99</b>	<b>96</b>	<b>99</b>	<b>98</b>
	<b>99</b>	<b>94</b>	<b>99</b>	<b>99</b>
	<b>99</b>	<b>95</b>	<b>99</b>	<b>103</b>
	<b>98</b>	<b>97</b>	<b>98</b>	<b>100</b>
	<b>95</b>	<b>91</b>	<b>95</b>	<b>92</b>

Because of their **natural health**, VikingHolstein cows have **excellent fertility**. They also **calve easily**

# VikingHolstein conception rate

- VikingHolsteins have high conception rate.



heifers

**63%**

VikingHolstein



cows

**50%**

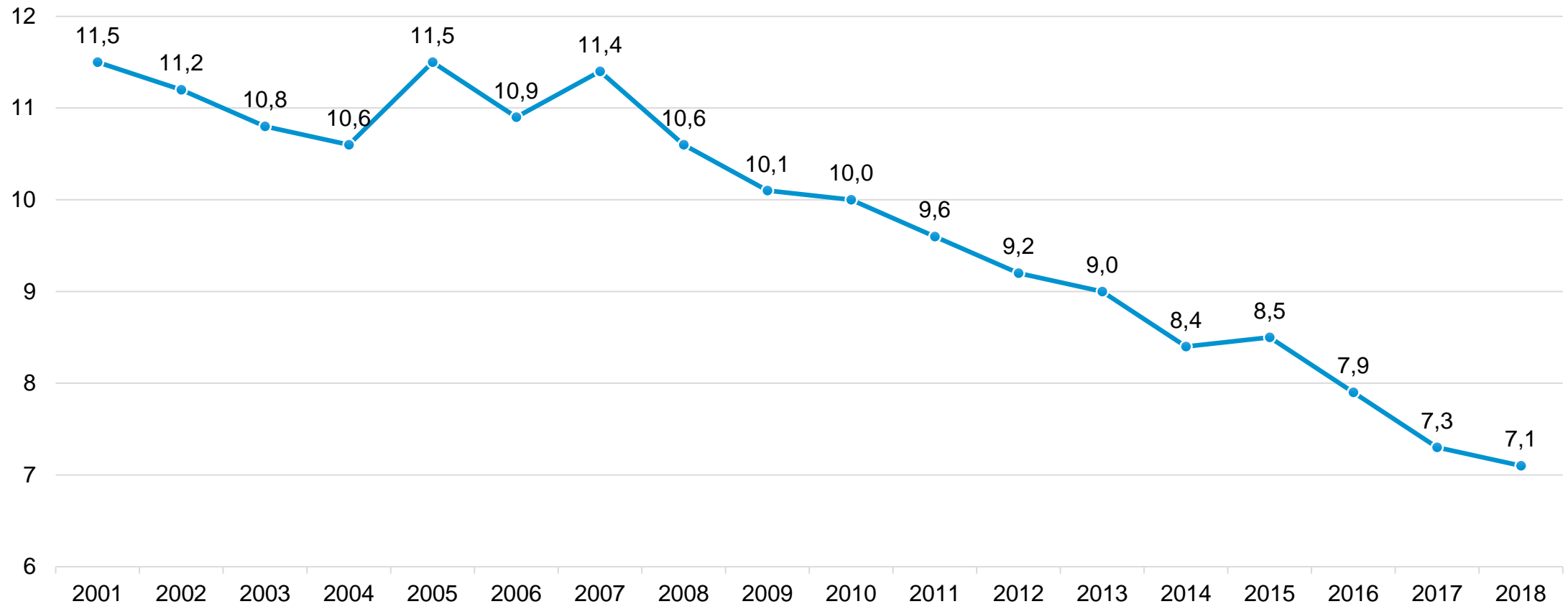
VikingHolstein





# Stillborn calves from heifers

**% of stillbirths, 1st. lactation - VikingHolstein, Denmark**



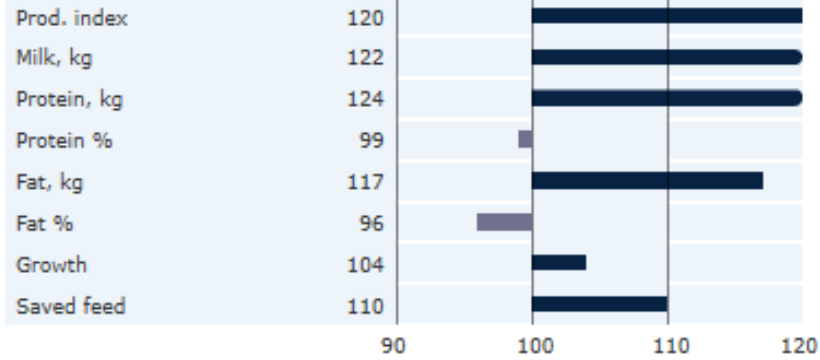
# VH Bernell

NTM +33 PCR<sub>s</sub> 589, PCRL 592  
Bube x VH Salomon x Mascol



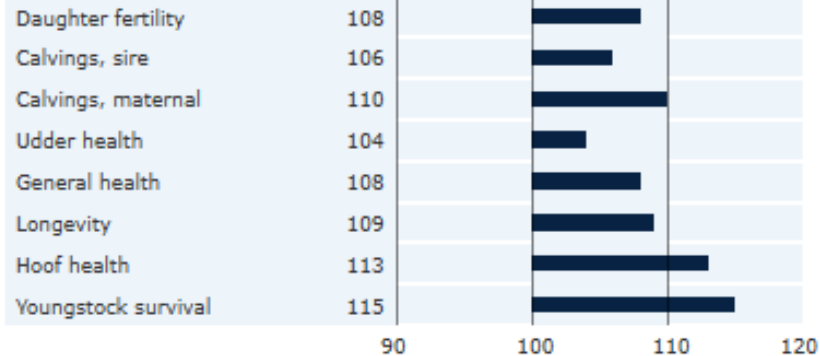
## PRODUCTION TRAITS

Number of daughters: 4586 , Reliability prod. 99%



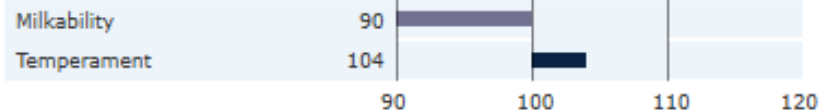
## HEALTH TRAITS

Number of daughters: 4557 , Reliability 99%



## FUNCTIONAL TRAITS

Number of daughters: 2072 , Reliability 99%



## CONFORMATION TRAITS

Number of daughters: 2072 , Reliability 99%

