



Six extra WHFF traits

results of survey

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April 2024

Start: survey among WHFF members



- ▶ Many organizations score more than the 18 standard WHFF traits
- ▶ Goal: which traits are scored extra
harmonise non-official WHFF -> share definitions
traits candidate for official WHFF trait list?
- ▶ Working group organized a survey, winter 2021 /22
22 extra traits
-> shortlist of 6 traits
at least 50% countries score the trait or going to
score shortly

Extra traits from WHFF 2022 survey



	BRA	IRL	SWE	USA	COL	AUS	FRA	ESP	HUN	JAP	CHE	LTV	ITA	DFS	POL	NLD	DEU	LUX	CZE	NZL	CAN	EST	WAL	PRT	nr countries	
2. Other linear traits																									24	
B: Conformation													Pub													1
B: Dairy character																	Pub	Pub								2
B: Harmony																	research	research								2
B: Height at front end								Score			Pub										Pub			Pub		4
B: Loin Strength/Top line			Pub			Pub	Score	Score			Pub										Pub		Pub	Pub		8
B: Muzzle Width						Pub																				1
B: Structure of ribs																	research	research								2
B: Thurl Placement						Score															Pub					2
F: Bone quality		Pub	Pub				Score	Pub	Resear	Score	Pub			Pub	Score		research	research	Pub		Pub		Pub	Pub		15
F: Digital dermatitis							Score																			1
F: Front feet position							Score				Score					Pub	score	score			Pub					6
F: Functionality Feet & Legs													Score													1
F: Heel Depth	Pub					Pub				Score	Pub										Pub					5
F: Hock quality			Pub				Score							Pub			Pub	Pub								5
F: Lameness							Score																Score			2
U: Fore udder length												Pub														1
U: Rear Udder width	Pub	Pub	Pub	Pub	Score	Pub		Score	Score	Pub	Pub		Pub	Pub	Pub				Pub		Pub		Pub	Pub		17
U: Reat teat length					Score																					1
U: Teat placement side		Pub																								1
U: Teat thickness			Pub				Score								Pub											3
U: Udder balance			Pub	research			Pub			Pub					Pub								Pub	Pub		9
U: Udder texture		Pub				Pub		Score	Research		Pub						score	score			Pub		Pub	Pub		8

Pub = breeding values published
 Score = trait is scored, no breeding values
 Research = trait scored as research trait



List with extra traits

- Rear udder width
 - Bone quality
 - Udder balance
 - Loin strength
 - Udder texture
 - Front feet orientation
- => definition and pictures

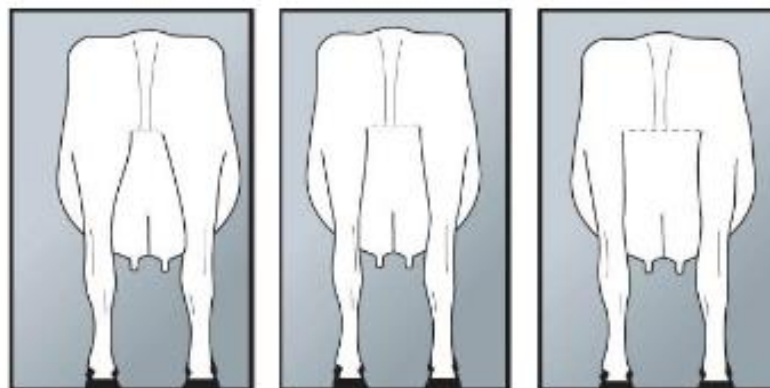
Rear udder width

Ref. Point: Width of the udder at the point where the milk secretion tissue is attached to the body.

1 - narrow

5 - intermediate

9 - wide



1

5

9

Narrow

Wide

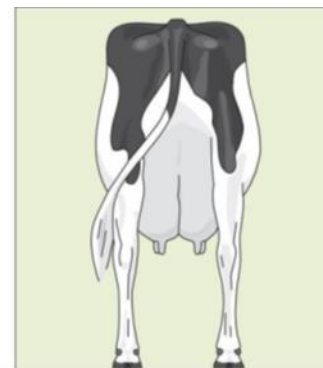
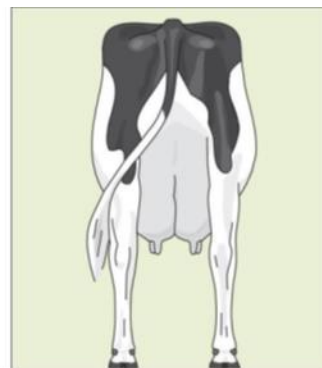
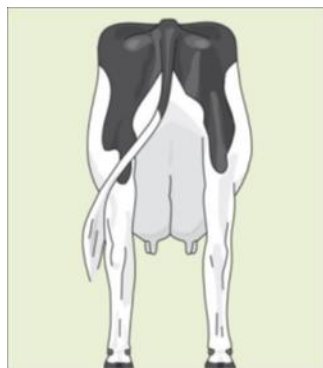
Bone quality

Ref. Point: Flatness of bone in the rear legs between the hock and pastern, viewed from the rear.

1 - coarse

5 - intermediate

9 - flat



Udder balance

Ref. Point: Levelness of udder floor

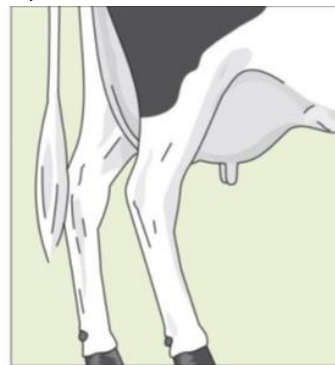
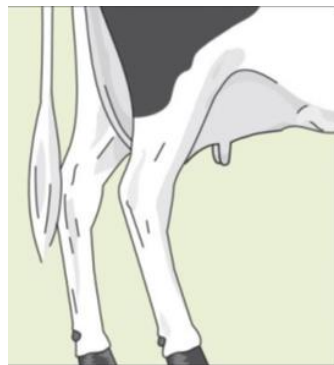
The trait is assessed from the side where the deepest point of the rear udder floor is compared to the deepest point of the front udder floor.

In case there is a difference between both sides, score the most natural side.

1 – rear deeper

5 – intermediate

9 – front deeper



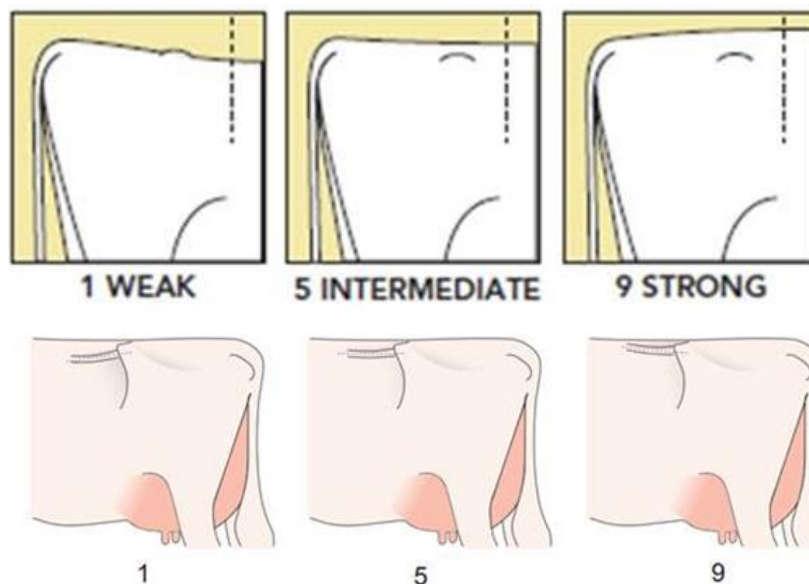
Loin strength

- ▶ **Ref. Point:** Strength of the loin

1 – weak

5 – intermediate

9 – strong



Udder texture



Ref. Point: Softness of the tissue of the udder

It is not a linear trait.

For an empty udder an udder which is milked away is considered to be soft, and an udder with a lot of tissue left (fleshy) is scored as fleshy.

For a full udder an udder with thin skin and visible veins are indicators for a soft udder.

1 – fleshy

5 – intermediate

9 – soft





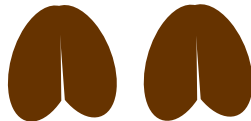
Front feet orientation

Ref. Point: The orientation of the front feet, scored from behind the cow

1 – toes extremely out

5 – intermediate

9 – toes parallel

	1	5	9
	Extreme toe-out	Average slightly outside oriented	Parallel. straight forward
			



Criteria for official WHFF conformation trait

- ▶ 1. Trait is a **linear** (one dimension) trait and has a clear trait definition
- ▶ 2. Trait has no **genetic correlation** above a certain level, like **0.85**, with one of the official WHFF linear traits
- ▶ 3. Trait has a **heritability** of at least a certain level, like 10%.
- ▶ 4. Trait has added value for a **functional trait** like longevity, udder health, fertility, claw health. A genetic correlation with a functionality trait could be considered to be at least **20%**
- ▶ 5a. About at least **50 percent of WHFF member countries** are scoring the trait or have plans to start scoring and introduce a breeding value within 3 years
- ▶ OR
- ▶ 5b. Countries score a **defect** which is similar to the linear trait and the incidence is **higher than 5 percent**, and the defect is scored in many countries, like more than **50% of the countries**.

Application of criteria to the 6 traits



	Rear udder width	Bone quality	Udder balance	Loin strength	Udder structure	Front feet orientation
Linear trait	Y	Y	Y	Y	N	Y
Genetic correlation other linear traits less than 0.85	N	Y	Y	Y	Y	Y
Heritability at least 0.10	Y	Y	Y	Y	Y	Y
Genetic correlation functional trait at least 0.20	Y longevity	N	Y longevity	N	Y mastitis	Y claw health
More than 50% WHFF score the trait	Y	Y	Y	N	N	Y
Scored as defect with at least 5% incidence, and scored in > 50% countries	N	N	N	N	N	N
Candidate standard WHFF list	N	N	Y	N	N	Y
Candidate extra trait list	Y	Y	N	Y	Y	N



Proposal to WHFF board

Two traits for standard WHFF linear trait list

udder balance

front feet orientation

Four traits for extra trait list

rear udder width

bone quality

loin strength

udder texture

=> document with description on WHFF site