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 Conversion Factors For Production Traits. Source: INTERBULL 1904
 Converted Canadian Proof = A + (B* Foreign Proof)
 Converted Proof Reliability = PCORR2*Foreign Reliability

breed	country2	amilk	bmilk	afat	bfat	aprot	bprot	pcorr2
MSH	AUS	836.30	0.9500	57.600	1.2880	28.400	0.8640	0.6084
MSH	CAN	620.70	0.6580	38.700	0.7680	18.000	0.5190	0.7921
MSH	DEU	924.20	0.7170	68.900	0.9240	32.100	0.5980	0.7921
MSH	DFS	-2785.40	40.6190	-115.600	1.9130	-55.700	0.9890	0.7921
MSH	EST	903.00	0.9090	53.200	1.1290	29.800	0.7410	0.7921
MSH	GBR	301.20	1.5480	21.900	2.1410	11.200	1.4550	0.7921
MSH	IRL	1095.67	2.3930	58.172	2.6104	33.949	1.8708	0.7056
MSH	LTU	81.60	1.3650	24.800	1.3960	9.200	1.1900	0.7921
MSH	LVA	676.60	1.4690	48.400	1.7140	23.700	1.2870	0.7921
MSH	NLD	1586.89	0.5442	83.285	0.7281	47.728	0.4038	0.7921
MSH	NOR	-2206.30	33.2290	-103.700	1.6600	-49.200	0.8770	0.7921
MSH	NZL	577.10	1.3130	66.300	1.4800	28.500	1.1780	0.5776
MSH	USA	390.50	0.7280	22.800	0.9180	11.900	0.5940	0.8464
MSH	ZAF	466.96	0.6972	25.144	1.0534	13.162	0.6593	0.7921

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 Conversion Factors For SCS Traits. Source: INTERBULL 1904
 Converted Canadian Proof = A + (B* Foreign Proof)
 Converted Proof Reliability = SCORR2*Foreign Reliability

breed	country2	a	b	scorr2
MSH	AUS	100.200	-17.6310	0.8649
MSH	CAN	7.600	0.9480	0.8836
MSH	DEU	63.500	0.3830	0.8836
MSH	DFS	63.300	0.4080	0.8836
MSH	EST	57.500	0.4410	0.8836
MSH	GBR	101.600	-0.4610	0.8836
MSH	LTU	99.400	-14.6890	0.8649
MSH	LVA	99.000	-12.0010	0.8649
MSH	NLD	-37.437	1.3802	0.8836
MSH	NOR	63.700	0.3800	0.8649
MSH	NZL	97.100	-12.8060	0.8281
MSH	USA	167.800	-22.1010	0.8100
MSH	ZAF	102.616	-0.2094	0.8649

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 Conversion Factors For Type. Source = INTERBULL MACE 1904
 Converted Canadian Proof = A + (B* Foreign Proof)
 Converted Proof Reliability = TCORR2*Foreign Reliability

country2=AUS

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MSH	CONFORMATION	AUS	CONFORMATION	3.463	6.5208	0.6
MSH	FET AND LEGS	AUS	OVERALL FEET & LEG	-56.432	0.5755	
MSH	MAMMARY SYSTEM	AUS	OVERALL UDDER SCORE	4.582	6.9424	
MSH	STATURE	AUS	STATURE	0.377	8.2208	
MSH	CHEST WIDTH	AUS	CHEST WIDTH	2.659	13.1259	
MSH	BODY DEPTH	AUS	BODY DEPTH	1.870	9.4896	
MSH	PIN WIDTH	AUS	RUMP WIDTH	1.431	13.7674	
MSH	RUMP ANGLE	AUS	RUMP ANGLE	-2.171	12.4930	
MSH	FOOT ANGLE	AUS	FOOT ANGLE	-0.130	20.1874	
MSH	REAR LEGS SIDE VIEW	AUS	REAR LEG SET	1.285	20.7267	
MSH	REAR LEG REAR VIEW	AUS	REAR LEG REAR VIEW	1.764	18.5768	
MSH	UDDER DEPTH	AUS	UDDER DEPTH	0.850	8.8424	
MSH	MEDIAN SUSPENSORY	AUS	MEDIAN SUSPENSORY	0.411	11.5290	
MSH	FORE ATTACHMENT	AUS	FORE UDDER	3.074	12.8449	
MSH	TEAT PLACEMENT	AUS	FRONT TEAT PLACEMENT	3.831	11.4915	
MSH	TEAT LENGTH	AUS	TEAT LENGTH	-0.556	14.3964	
MSH	REAR ATTACHMENT HEIGHT	AUS	REAR UDDER HEIGHT	1.486	10.0609	
MSH	REAR TEAT PLACEMENT	AUS	REAR TEAT PLACEMENT	0.477	14.9541	
MSH	ANGULARITY	AUS	ANGULARITY	2.657	10.7664	

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 Conversion Factors For Type. Source = INTERBULL MACE 1904
 Converted Canadian Proof = A + (B* Foreign Proof)
 Converted Proof Reliability = TCORR2*Foreign Reliability

country2=CAN

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MSH 4	CONFORMATION	CAN	CONFORMATION	6.357	0.7810	0.7
MSH	FEET AND LEGS	CAN	OVERALL FEET & LEG	5.650	0.8692	
MSH	MAMMARY SYSTEM	CAN	OVERALL UDDER SCORE	10.145	0.9700	
MSH	STATURE	CAN	STATURE	4.699	0.8099	
MSH	CHEST WIDTH	CAN	CHEST WIDTH	-0.057	0.7648	
MSH	BODY DEPTH	CAN	BODY DEPTH	1.800	0.6678	
MSH	PIN WIDTH	CAN	RUMP WIDTH	4.269	0.9254	
MSH	RUMP ANGLE	CAN	RUMP ANGLE	-0.656	0.9132	
MSH	FOOT ANGLE	CAN	FOOT ANGLE	1.802	0.9532	
MSH	REAR LEGS SIDE VIEW	CAN	REAR LEG SET	-0.299	0.8387	
MSH	REAR LEG REAR VIEW	CAN	REAR LEG REAR VIEW	4.245	0.7568	
MSH	UDDER DEPTH	CAN	UDDER DEPTH	4.346	0.8041	
MSH	MEDIAN SUSPENSORY	CAN	MEDIAN SUSPENSORY	3.412	0.7600	
MSH	FORE ATTACHMENT	CAN	FORE UDDER	7.168	0.9779	
MSH	TEAT PLACEMENT	CAN	FRONT TEAT PLACEMENT	4.385	1.1211	
MSH	TEAT LENGTH	CAN	TEAT LENGTH	-2.019	1.3561	
MSH	REAR ATTACHMENT HEIGHT	CAN	REAR UDDER HEIGHT	8.888	0.9219	
MSH	REAR TEAT PLACEMENT	CAN	REAR TEAT PLACEMENT	3.361	0.9258	
MSH	ANGULARITY	CAN	ANGULARITY	7.081	0.7196	

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Conversion Factors For Type. Source = INTERBULL MACE 1904
Converted Canadian Proof = A + (B* Foreign Proof)
Converted Proof Reliability = TCORR2*Foreign Reliability

country2=DEU

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MSH	FEEET AND LEGS	DEU	OVERALL FEET & LEG	-27.248	0.3412
MSH	MAMMARY SYSTEM	DEU	OVERALL UDDER SCORE	-28.970	0.3738
MSH	STATURE	DEU	STATURE	-32.788	0.3796
MSH	CHEST WIDTH	DEU	CHEST WIDTH	-43.086	0.4548
MSH	BODY DEPTH	DEU	BODY DEPTH	-40.637	0.4445
MSH	PIN WIDTH	DEU	RUMP WIDTH	-51.692	0.5729
MSH	RUMP ANGLE	DEU	RUMP ANGLE	-63.373	0.5919
MSH	FOOT ANGLE	DEU	FOOT ANGLE	-36.928	0.4227
MSH	REAR LEGS SIDE VIEW	DEU	REAR LEG SET	-63.659	0.5954
MSH	REAR LEG REAR VIEW	DEU	REAR LEG REAR VIEW	-42.476	0.4839
MSH	UDDER DEPTH	DEU	UDDER DEPTH	-33.269	0.3729
MSH	MEDIAN SUSPENSORY	DEU	MEDIAN SUSPENSORY	-34.997	0.3726
MSH	FORE ATTACHMENT	DEU	FORE UDDER	-45.129	0.4945
MSH	TEAT PLACEMENT	DEU	FRONT TEAT PLACEMENT	-43.298	0.4716
MSH	TEAT LENGTH	DEU	TEAT LENGTH	-53.512	0.4934
MSH	REAR ATTACHMENT HEIGHT	DEU	REAR UDDER HEIGHT	-31.934	0.3771
MSH	REAR TEAT PLACEMENT	DEU	REAR TEAT PLACEMENT	-40.058	0.4078
MSH	ANGULARITY	DEU	ANGULARITY	-34.485	0.4219

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 Conversion Factors For Type. Source = INTERBULL MACE 1904
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 Converted Proof Reliability = TCORR2*Foreign Reliability

country2=DFS

	c	c	f			
	a	o	o			
	n	u	r	a	b	t
b	t	n	t	v	v	c
r	r	t	r	a	a	o
e	a	r	a	l	l	r
e	i	y	i	u	u	r
d	t	2	t	e	e	2
MSH	CONFORMATION	DFS	CONFORMATION	-46.112	0.4823	0.7
4						
MSH	FEEET AND LEGS	DFS	OVERALL FEET & LEG	-36.437	0.4038	
MSH	MAMMARY SYSTEM	DFS	OVERALL UDDER SCORE	-47.268	0.5422	

MSH	STATURE	DFS	STATURE	-56.474	0.5853
MSH	CHEST WIDTH	DFS	CHEST WIDTH	-42.965	0.4503
MSH	BODY DEPTH	DFS	BODY DEPTH	-36.703	0.3655
MSH	PIN WIDTH	DFS	RUMP WIDTH	-51.620	0.5411
MSH	RUMP ANGLE	DFS	RUMP ANGLE	-54.367	0.5398
MSH	FOOT ANGLE	DFS	FOOT ANGLE	-64.426	0.6672
MSH	REAR LEGS SIDE VIEW	DFS	REAR LEG SET	-56.931	0.5874
MSH	REAR LEG REAR VIEW	DFS	REAR LEG REAR VIEW	-42.810	0.4598
MSH	UDDER DEPTH	DFS	UDDER DEPTH	-37.599	0.4180
MSH	MEDIAN SUSPENSORY	DFS	MEDIAN SUSPENSORY	-35.563	0.3623
MSH	FORE ATTACHMENT	DFS	FORE UDDER	-43.014	0.4875
MSH	TEAT PLACEMENT	DFS	FRONT TEAT PLACEMENT	-46.871	0.5194
MSH	TEAT LENGTH	DFS	TEAT LENGTH	-67.697	0.6355
MSH	REAR ATTACHMENT HEIGHT	DFS	REAR UDDER HEIGHT	-45.271	0.4874
MSH	REAR TEAT PLACEMENT	DFS	REAR TEAT PLACEMENT	-43.875	0.4529
MSH	ANGULARITY	DFS	ANGULARITY	-55.109	0.5747

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Conversion Factors For Type. Source = INTERBULL MACE 1904
Converted Canadian Proof = A + (B* Foreign Proof)
Converted Proof Reliability = TCORR2*Foreign Reliability

country2=GBR

	c	c	f			
	a	o	o			
	n	u	r	a	b	t
b	t	n	t	v	v	c
r	r	t	r	a	a	o
e	a	r	a	l	l	r
e	i	y	i	u	u	r
d	t	2	t	e	e	2
MSH	FEET AND LEGS	GBR	OVERALL FEET & LEG	3.530	3.4848	
MSH	MAMMARY SYSTEM	GBR	OVERALL UDDER SCORE	9.146	4.0750	
MSH	STATURE	GBR	STATURE	2.378	4.3919	
MSH	CHEST WIDTH	GBR	CHEST WIDTH	4.289	3.7460	

MSH	BODY DEPTH	GBR	BODY DEPTH	4.014	3.1627
MSH	PIN WIDTH	GBR	RUMP WIDTH	3.171	4.4972
MSH	RUMP ANGLE	GBR	RUMP ANGLE	-2.851	3.5901
MSH	FOOT ANGLE	GBR	FOOT ANGLE	-0.200	3.9959
MSH	REAR LEGS SIDE VIEW	GBR	REAR LEG SET	-1.291	3.5443
MSH	UDDER DEPTH	GBR	UDDER DEPTH	3.963	2.4409
MSH	MEDIAN SUSPENSORY	GBR	MEDIAN SUSPENSORY	2.733	2.5700
MSH	FORE ATTACHMENT	GBR	FORE UDDER	7.722	3.4807
MSH	TEAT PLACEMENT	GBR	FRONT TEAT PLACEMENT	6.996	4.1001
MSH	TEAT LENGTH	GBR	TEAT LENGTH	-2.977	4.8238
MSH	REAR ATTACHMENT HEIGHT	GBR	REAR UDDER HEIGHT	6.469	4.0542
MSH	ANGULARITY	GBR	ANGULARITY	3.427	4.5353

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Conversion Factors For Type. Source = INTERBULL MACE 1904
Converted Canadian Proof = A + (B* Foreign Proof)
Converted Proof Reliability = TCORR2*Foreign Reliability

country2=NLD

	c	c	f			
	a	o	o		a	b
	n	u	r		v	v
b	t	n	t		a	a
r	r	t	r		l	l
e	a	r	a		u	u
e	i	y	i		e	e
d	t	2	t			2
MSH	CONFORMATION	NLD	CONFORMATION	-143.179	1.5958	0.7
6						
MSH	FEET AND LEGS	NLD	OVERALL FEET & LEG	-66.102	0.7220	
MSH	MAMMARY SYSTEM	NLD	OVERALL UDDER SCORE	-121.134	1.3820	
MSH	STATURE	NLD	STATURE	-91.771	1.0564	
MSH	CHEST WIDTH	NLD	CHEST WIDTH	-118.323	1.2728	
MSH	BODY DEPTH	NLD	BODY DEPTH	-90.282	1.0203	
MSH	PIN WIDTH	NLD	RUMP WIDTH	-86.988	0.9730	
MSH	RUMP ANGLE	NLD	RUMP ANGLE	-95.193	0.9355	
MSH	FOOT ANGLE	NLD	FOOT ANGLE	-122.379	1.3012	

MSH	REAR LEGS SIDE VIEW	NLD	REAR LEG SET	-112.431	1.0772
MSH	REAR LEG REAR VIEW	NLD	REAR LEG REAR VIEW	-86.094	0.9077
MSH	UDDER DEPTH	NLD	UDDER DEPTH	-90.425	0.9843
MSH	MEDIAN SUSPENSORY	NLD	MEDIAN SUSPENSORY	-94.969	1.0052
MSH	FORE ATTACHMENT	NLD	FORE UDDER	-123.067	1.3381
MSH	TEAT PLACEMENT	NLD	FRONT TEAT PLACEMENT	-136.759	1.4646
MSH	TEAT LENGTH	NLD	TEAT LENGTH	-120.730	1.2079
MSH	REAR ATTACHMENT HEIGHT	NLD	REAR UDDER HEIGHT	-89.167	1.0465
MSH	REAR TEAT PLACEMENT	NLD	REAR TEAT PLACEMENT	-108.792	1.1491
MSH	ANGULARITY	NLD	ANGULARITY	-94.958	1.1282

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Conversion Factors For Type. Source = INTERBULL MACE 1904
Converted Canadian Proof = A + (B* Foreign Proof)
Converted Proof Reliability = TCORR2*Foreign Reliability

country2=NOR

	c	c	f			
	a	o	o			
	n	u	r	a	b	t
b	t	n	t	v	v	c
r	r	t	r	a	a	o
e	a	r	a	l	l	r
e	i	y	i	u	u	r
d	t	2	t	e	e	2
MSH	CONFORMATION	NOR	CONFORMATION	-41.843	0.4360	0.7
4						
MSH	FEET AND LEGS	NOR	OVERALL FEET & LEG	-35.155	0.3521	
MSH	MAMMARY SYSTEM	NOR	OVERALL UDDER SCORE	-45.018	0.4761	
MSH	STATURE	NOR	STATURE	-42.271	0.4024	
MSH	CHEST WIDTH	NOR	CHEST WIDTH	-31.859	0.3811	
MSH	BODY DEPTH	NOR	BODY DEPTH	-28.100	0.2808	
MSH	PIN WIDTH	NOR	RUMP WIDTH	-38.182	0.4322	
MSH	RUMP ANGLE	NOR	RUMP ANGLE	-42.042	0.4278	
MSH	FOOT ANGLE	NOR	FOOT ANGLE	-40.964	0.4059	
MSH	REAR LEGS SIDE VIEW	NOR	REAR LEG SET	-41.135	0.4256	

MSH	REAR LEG REAR VIEW	NOR	REAR LEG REAR VIEW	-30.789	0.3243
MSH	UDDER DEPTH	NOR	UDDER DEPTH	-34.880	0.3501
MSH	MEDIAN SUSPENSORY	NOR	MEDIAN SUSPENSORY	-36.669	0.3450
MSH	FORE ATTACHMENT	NOR	FORE UDDER	-37.776	0.4028
MSH	TEAT PLACEMENT	NOR	FRONT TEAT PLACEMENT	-47.526	0.5003
MSH	TEAT LENGTH	NOR	TEAT LENGTH	-54.469	0.5126
MSH	REAR ATTACHMENT HEIGHT	NOR	REAR UDDER HEIGHT	-40.416	0.3907
MSH	REAR TEAT PLACEMENT	NOR	REAR TEAT PLACEMENT	-36.288	0.3777

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Conversion Factors For Type. Source = INTERBULL MACE 1904
Converted Canadian Proof = A + (B* Foreign Proof)
Converted Proof Reliability = TCORR2*Foreign Reliability

country2=NZL

	c	c	f			
	a	o	o			
	n	u	r	a	b	t
b	t	n	t	v	v	c
r	r	t	r	a	a	o
e	a	r	a	l	l	r
e	i	y	i	u	u	r
d	t	2	t	e	e	2
MSH	CONFORMATION	NZL	CONFORMATION	0.906	17.3616	0.6
1						
MSH	MAMMARY SYSTEM	NZL	OVERALL UDDER SCORE	-0.313	13.6358	
MSH	STATURE	NZL	STATURE	-6.305	10.2333	
MSH	CHEST WIDTH	NZL	CHEST WIDTH	2.966	15.9059	
MSH	BODY DEPTH	NZL	BODY DEPTH	1.543	11.9956	
MSH	PIN WIDTH	NZL	RUMP WIDTH	-1.227	18.0391	
MSH	RUMP ANGLE	NZL	RUMP ANGLE	-6.039	18.6454	
MSH	REAR LEGS SIDE VIEW	NZL	REAR LEG SET	2.256	43.5525	
MSH	MEDIAN SUSPENSORY	NZL	MEDIAN SUSPENSORY	-1.060	14.8287	
MSH	FORE ATTACHMENT	NZL	FORE UDDER	-0.978	17.3776	
MSH	TEAT PLACEMENT	NZL	FRONT TEAT PLACEMENT	-0.768	23.2963	
MSH	REAR ATTACHMENT HEIGHT	NZL	REAR UDDER HEIGHT	2.000	16.1951	
MSH	REAR TEAT PLACEMENT	NZL	REAR TEAT PLACEMENT	-2.349	17.1604	

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 Conversion Factors For Type. Source = INTERBULL MACE 1904
 Converted Canadian Proof = A + (B* Foreign Proof)
 Converted Proof Reliability = TCORR2*Foreign Reliability

country2=USA

	c	c	f			
b	n	o	o	a	b	t
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e	a	t	a	a	a	o
e	i	r	i	l	l	r
d	t	y	t	u	u	r
		2		e	e	2
MSH	CONFORMATION	USA	CONFORMATION	4.619	6.3285	0.7
6						
MSH	FEET AND LEGS	USA	OVERALL FEET & LEG	4.251	4.5175	
MSH	MAMMARY SYSTEM	USA	OVERALL UDDER SCORE	8.442	5.7917	
MSH	STATURE	USA	STATURE	2.755	2.3957	
MSH	CHEST WIDTH	USA	CHEST WIDTH	0.702	4.9248	
MSH	BODY DEPTH	USA	BODY DEPTH	2.227	3.9825	
MSH	PIN WIDTH	USA	RUMP WIDTH	2.902	4.8060	
MSH	RUMP ANGLE	USA	RUMP ANGLE	-1.614	5.1934	
MSH	FOOT ANGLE	USA	FOOT ANGLE	0.328	6.6637	
MSH	REAR LEGS SIDE VIEW	USA	REAR LEG SET	-1.284	7.1972	
MSH	REAR LEG REAR VIEW	USA	REAR LEG REAR VIEW	2.559	-6.6643	
MSH	UDDER DEPTH	USA	UDDER DEPTH	4.055	4.0958	
MSH	MEDIAN SUSPENSORY	USA	MEDIAN SUSPENSORY	0.510	4.6014	
MSH	FORE ATTACHMENT	USA	FORE UDDER	5.733	4.8592	
MSH	TEAT PLACEMENT	USA	FRONT TEAT PLACEMENT	4.415	5.1708	
MSH	TEAT LENGTH	USA	TEAT LENGTH	-2.699	5.8144	
MSH	REAR ATTACHMENT HEIGHT	USA	REAR UDDER HEIGHT	7.636	4.3745	
MSH	REAR TEAT PLACEMENT	USA	REAR TEAT PLACEMENT	2.938	4.9660	
MSH	ANGULARITY	USA	ANGULARITY	6.219	5.2196	

CALCULATION OF FAT% AND PROTEIN% FOR APRIL 2019

BREED	BMILK	BFAT	BPRT
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AYS	7813	325	264
BSW	8633	366	305
CN	5913	254	210
GUE	6904	324	238
JER	6735	343	259
HOL	10397	407	336
MS	6689	264	222

$$EBVFAT\% = 200 * [(BFAT + EBVFAT * 0.5) / (BMILK + EBVMILK * 0.5) - (BFAT / BMILK)]$$

$$EBVPROT\% = 200 * [(BPRT + EBVPRT * 0.5) / (BMILK + EBVMILK * 0.5) - (BPRT / BMILK)]$$

EXAMPLE:

A HOLSTEIN bull has EBV MILK=+1000, EBVFAT=+50, EBVPROT=+40

$$\begin{aligned}
 EBVFAT\% &= 200 * [(407 + 50 * 0.5) / (10397 + 1000 * 0.5) - (407 / 1E4)] \\
 &= 200 * [(407 + 25) / (10397 + 500) - (0.03915)] \\
 &= 200 * [0.03964 - 0.03915] \\
 &= 200 * 0.00050 \\
 &= 0.10
 \end{aligned}$$

$$\begin{aligned}
 EBVPROT\% &= 200 * [(336 + 40 * 0.5) / (10397 + 1000 * 0.5) - (336 / 1E4)] \\
 &= 200 * [(336 + 20) / (10397 + 500) - (0.03232)] \\
 &= 200 * [0.03267 - 0.03232] \\
 &= 200 * 0.00035 \\
 &= 0.07
 \end{aligned}$$