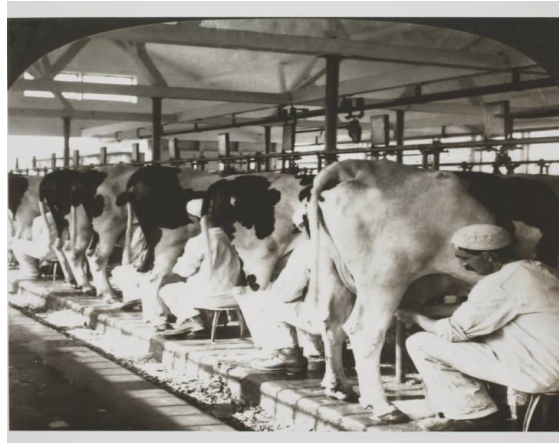
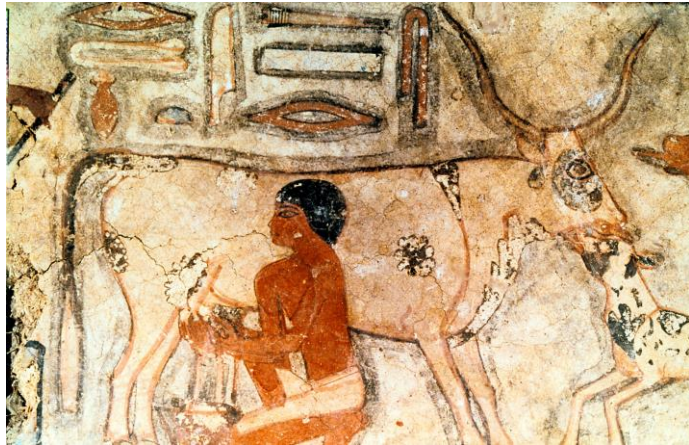


The charm and pain of large dairy farms and high milk yield



Andres Valdmann



www.emu.ee

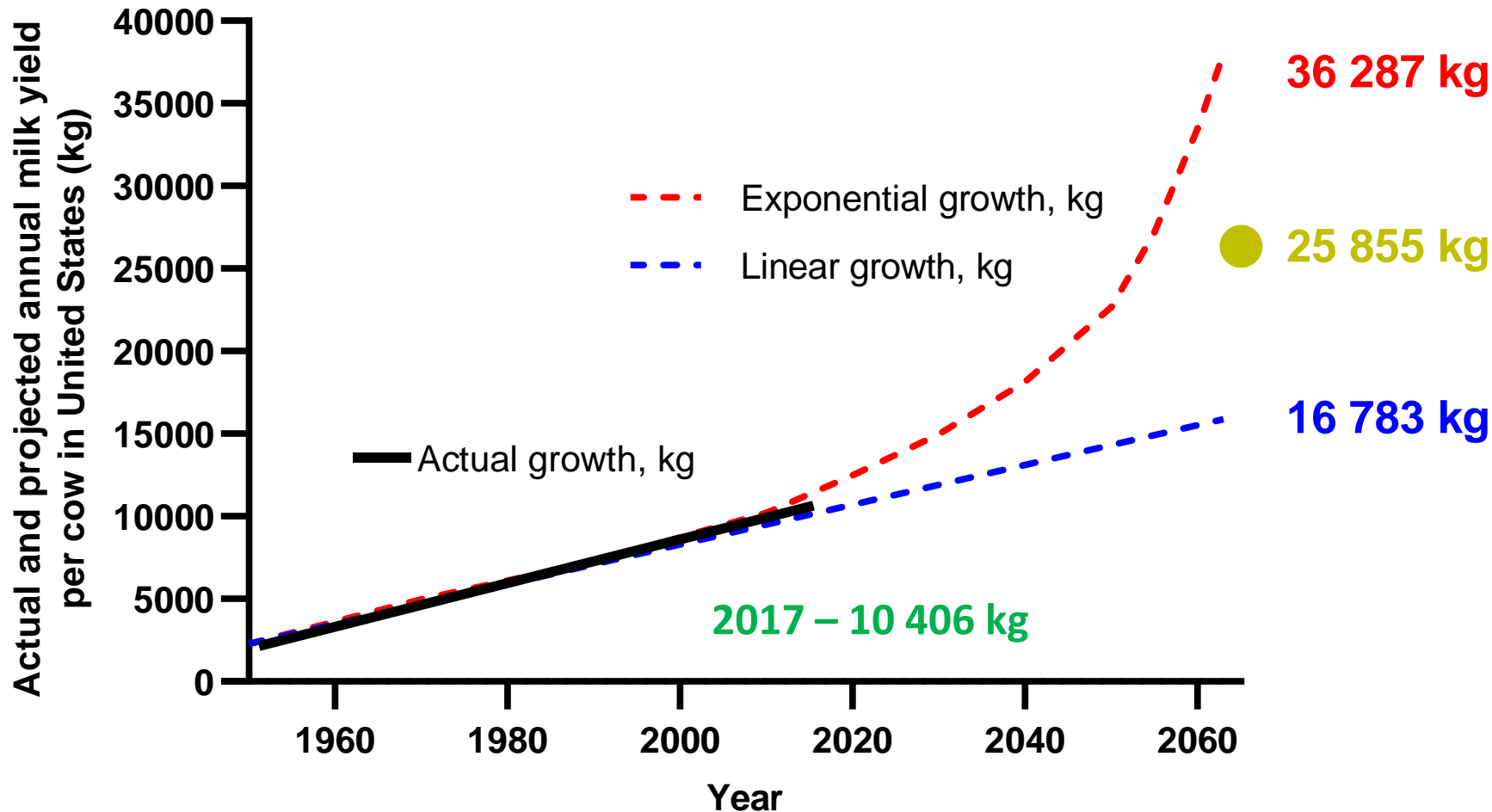
 **Eesti Maaülikool**
Estonian University of Life Sciences

Veterinaarmeditsiini ja loomakasvatuse instituut
Institute of Veterinary Medicine and Animal Sciences



Invited review: Learning from the future—A vision for dairy farms and cows in 2067

Forecasted change in milk yield of US dairy cows



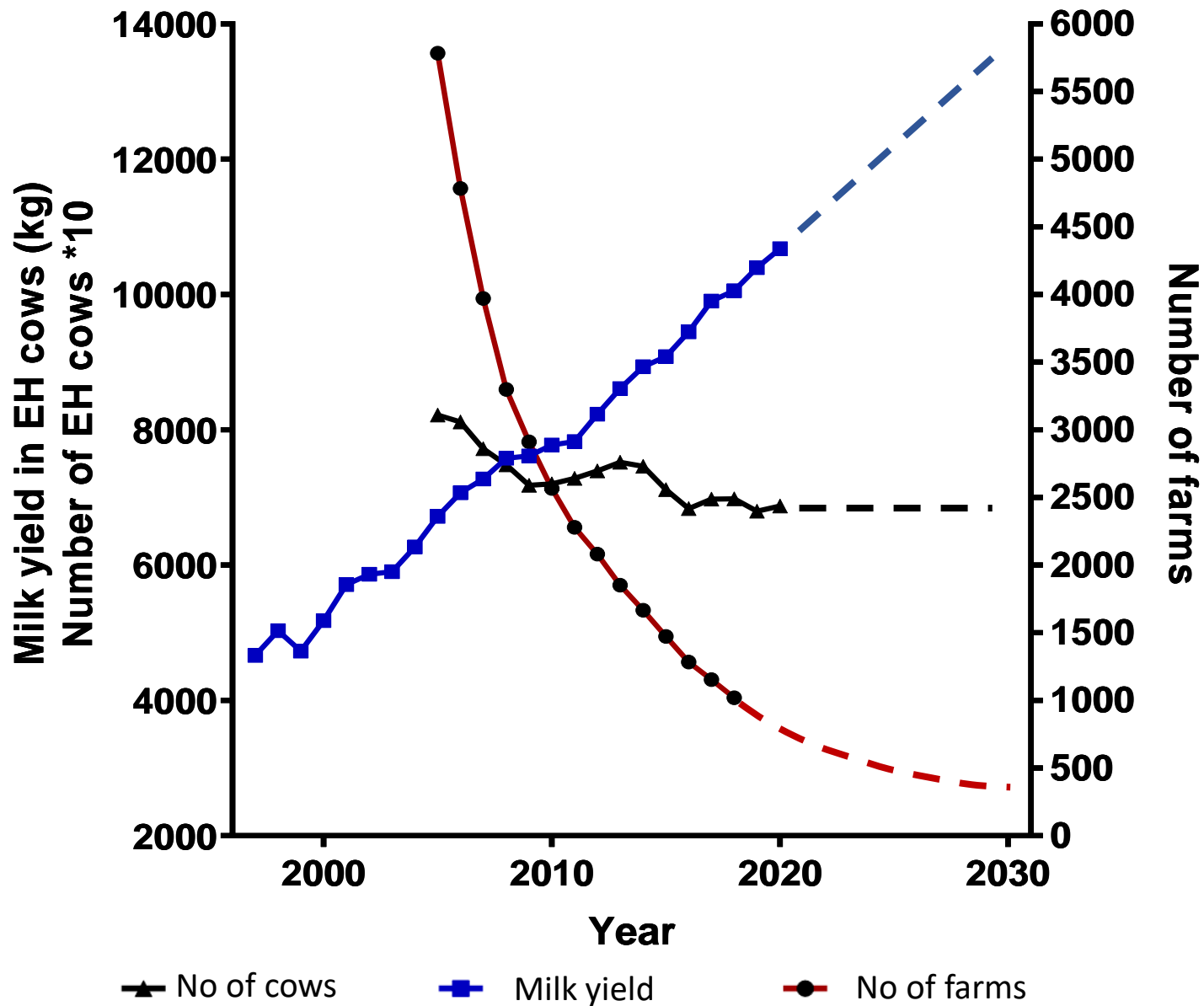
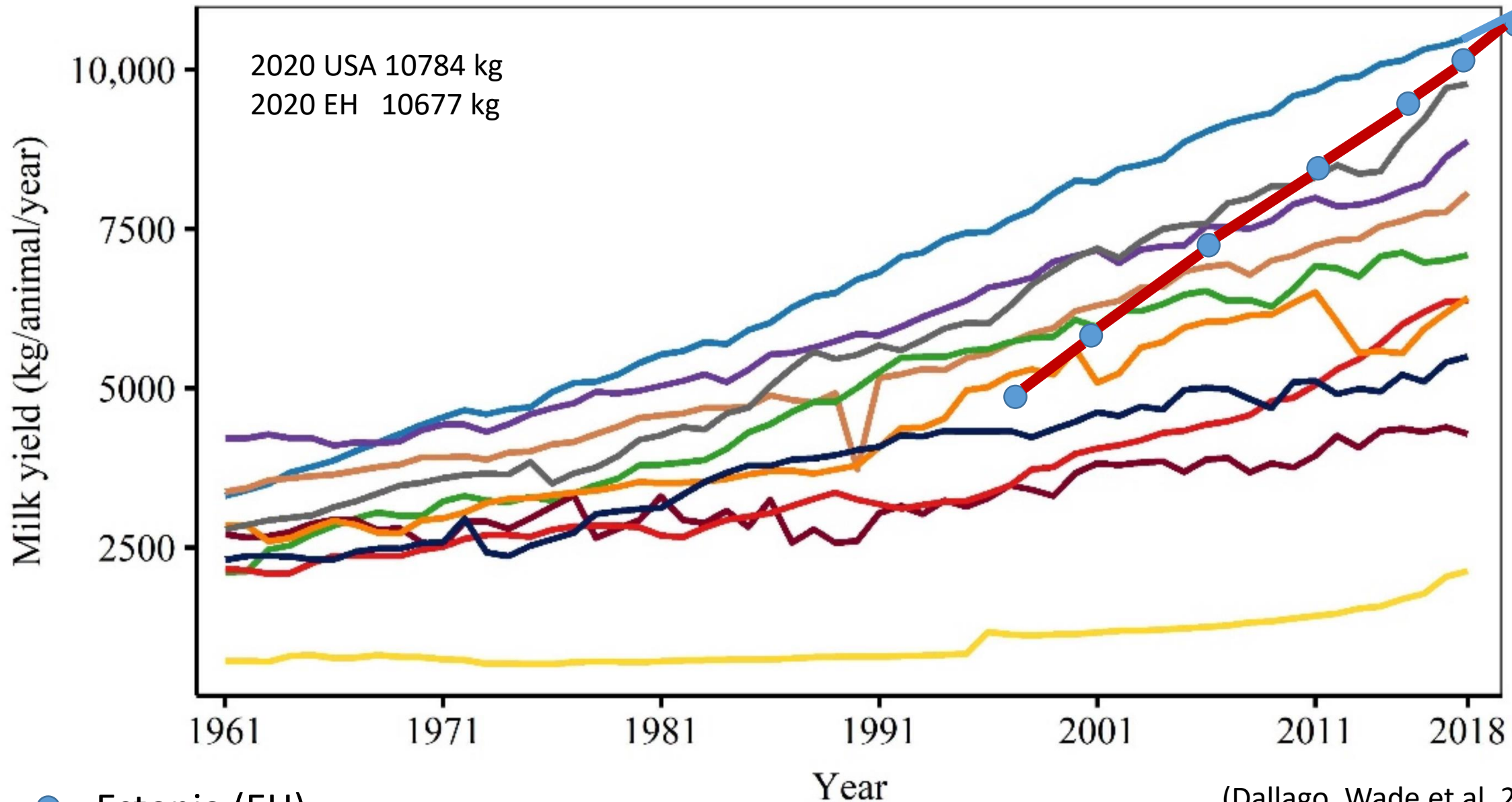


Fig. A. Valdmann. Data from EPJ and PRIA

Country	Phenotypic increase of milk yield in Holstein cows (kg/year)
USA	193
Netherlands	131
Ireland	46
New Zealand	35
Estonia (1997-2020)	261

EUROPE: 13% less dairy farms by 2030
 ESTONIA: 50% less dairy farms by 2030



- Estonia (EH)
- United States of America — Germany — New Zealand — Poland — Canada
- Brazil — France — Netherlands — Italy — Ireland

Šķelmei piena rekords – 21 000 litru!



Latvijas rekordiste Šķelme no z/s "Ceriņi" viena gada laikā saviem saimniekiem iedevusi vairāk nekā 21 t piena.

Foto – Dainis Bušmanis

Sündis uus Eesti piimatoodangu rekord



Rekordlehm Mille on Eestis teine lehm, kelle laktatsiooni piimatoodang on ületanud 20 tonni. Üle 18 tonni on tootnud 51 lehma, neist neli on kuulunud Kõljala POÜ-le.

Autor: ETKÜ

305 d milk yield 20 391 kg

Best dairy herds in Latvia and Estonia according to milk fat and protein yield (2020)

Enterprise	Number of cows	Milk yield, kg	Fat + protein, kg
Z/s Ceriņi	373	15620	1074.4
Z/s Kalējiņi 1	527	14895	1022
SIA PĒRLES A.A.J.	340	14458	998
Z/s Vītoliņi	88	14414	979.9
OÜ Vändra Vara	106	13591	962
OÜ Härjanurme Mõis	1080	12664	949
OÜ Kaiu LT	792	14062	946

Data



An equivalent metabolic demand for humans is running 7 marathons every day

A 5 year old Selz-Pralle Aftershock 3918

35,457 kg of milk; 1,403 kg of butterfat; 1,085 kg of protein



60 triatlons

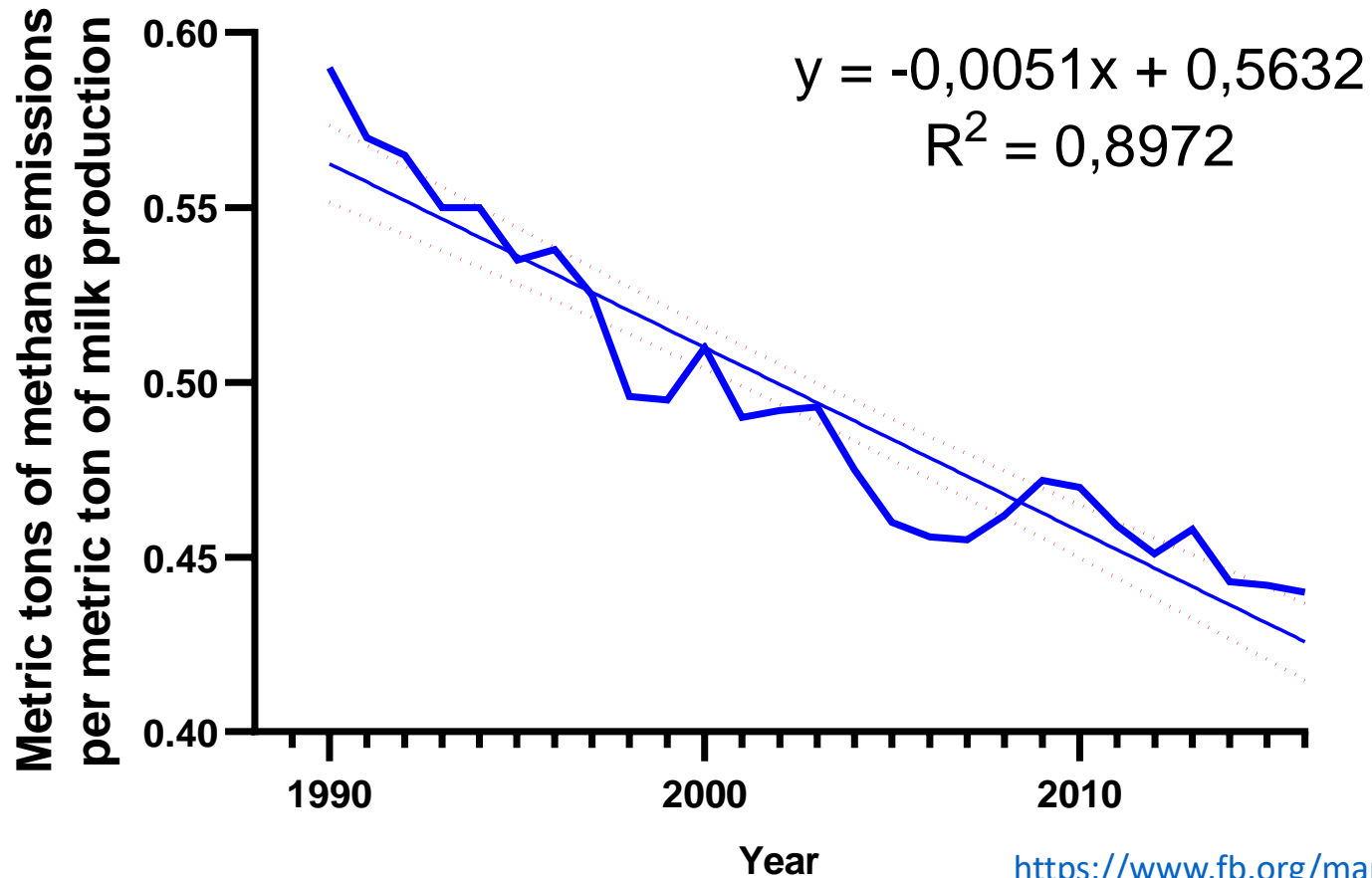


$365 \times 7 = 2555$ marathons = 295 km a day

2553 kg of glucose is needed to produce 35,475 kg of milk

142,000 cups of milk
23,800 dozens of eggs
5400 roasted chicken
270 whole hogs
108 sides of beef

Methane emissions per unit of milk production



<https://www.fb.org/market-intel/agriculture-and-greenhouse-gas-emissions>

In the US, methane emissions per unit of milk produced have fallen by 25% in 16 years
In Estonia, methane emissions per unit of milk produced have fallen by 50% in 20 years



In Estonia 71% of dairy cows are in herds >300 cows

Herds with >300 cows make up 1/5 (19.9%) of all herds
75% of the milk is produced in herds with > 300 cows

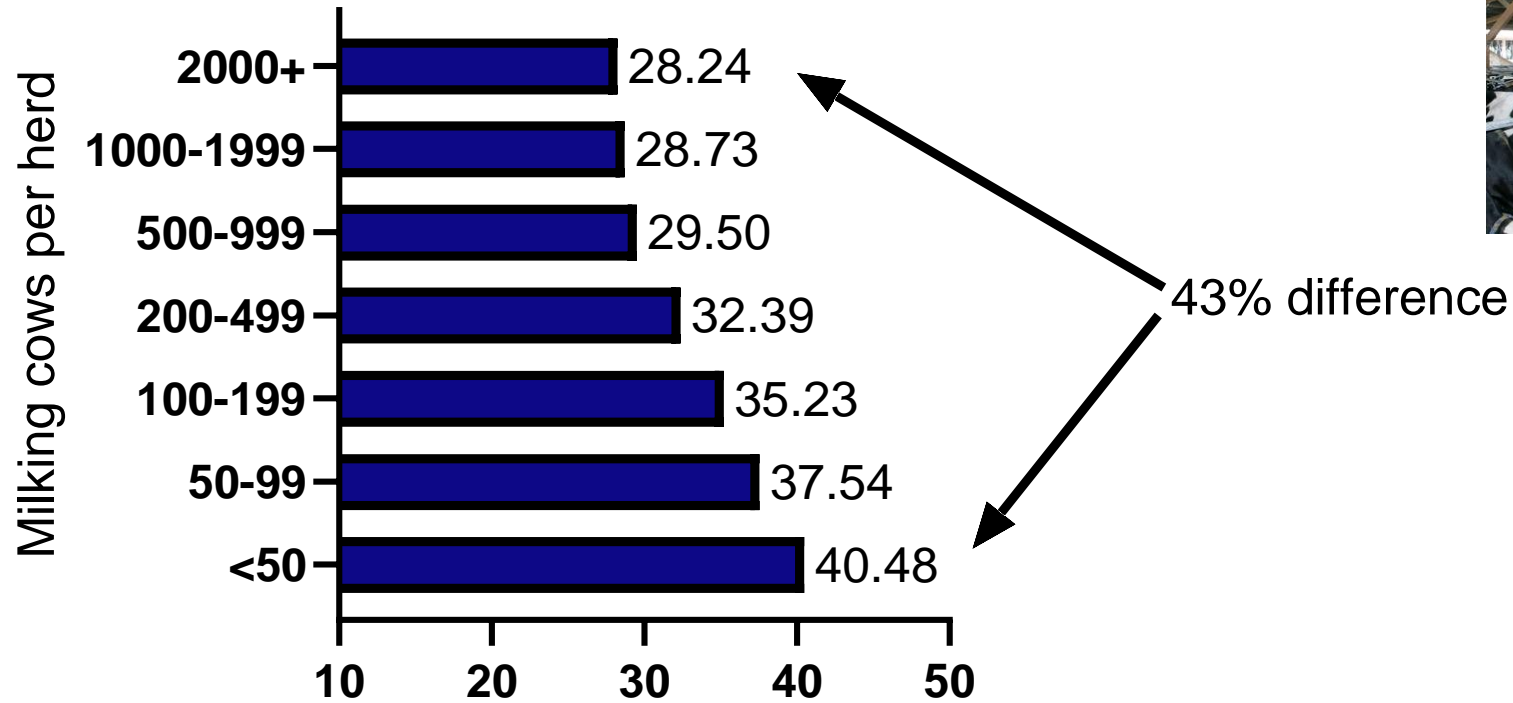


8 herds > 1200 cows produce 18.1% of all milk in Estonia



In total only 44 large herds are needed to produce all milk in Estonia

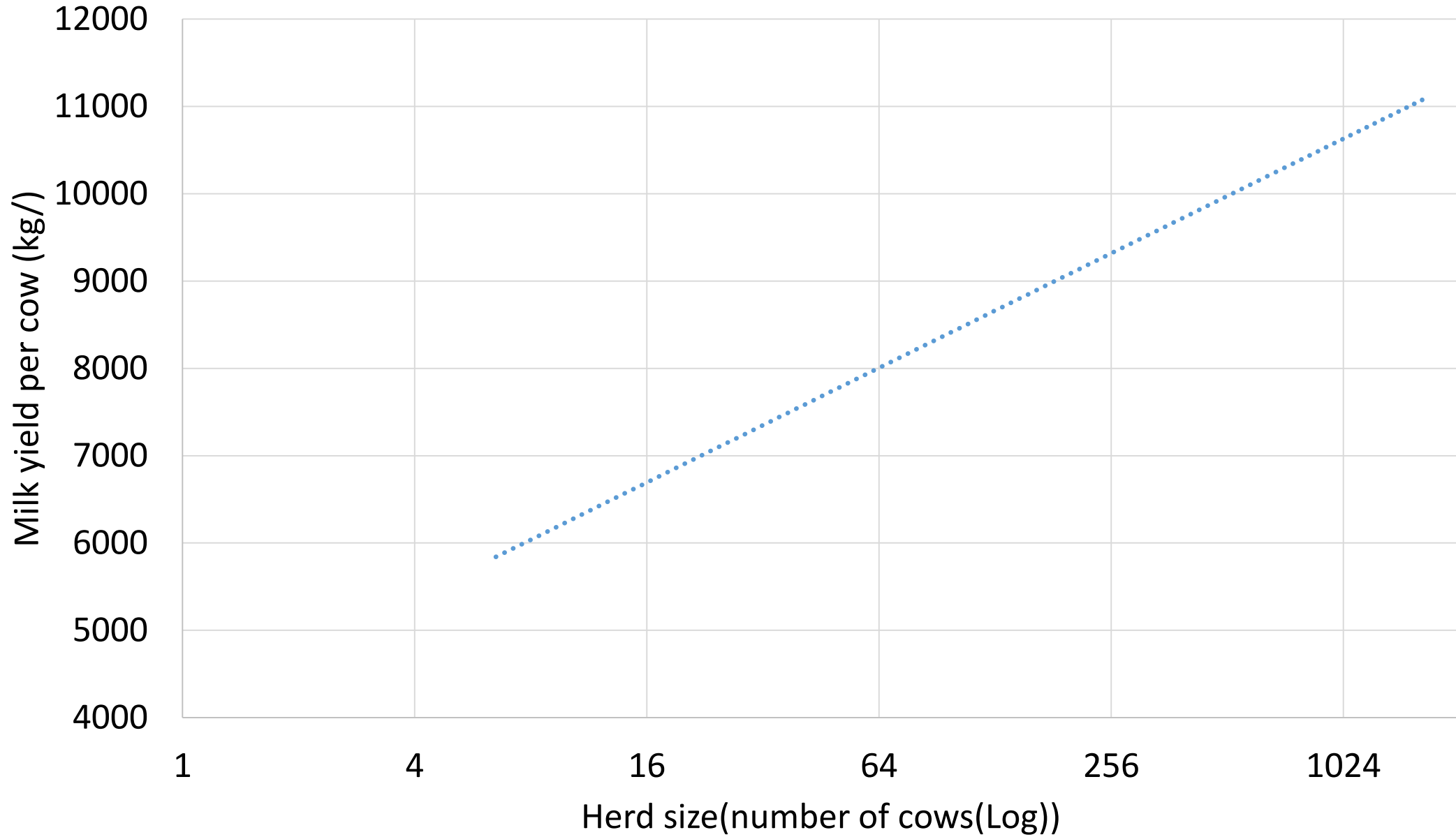
Operating costs and herd size, USA, 2019



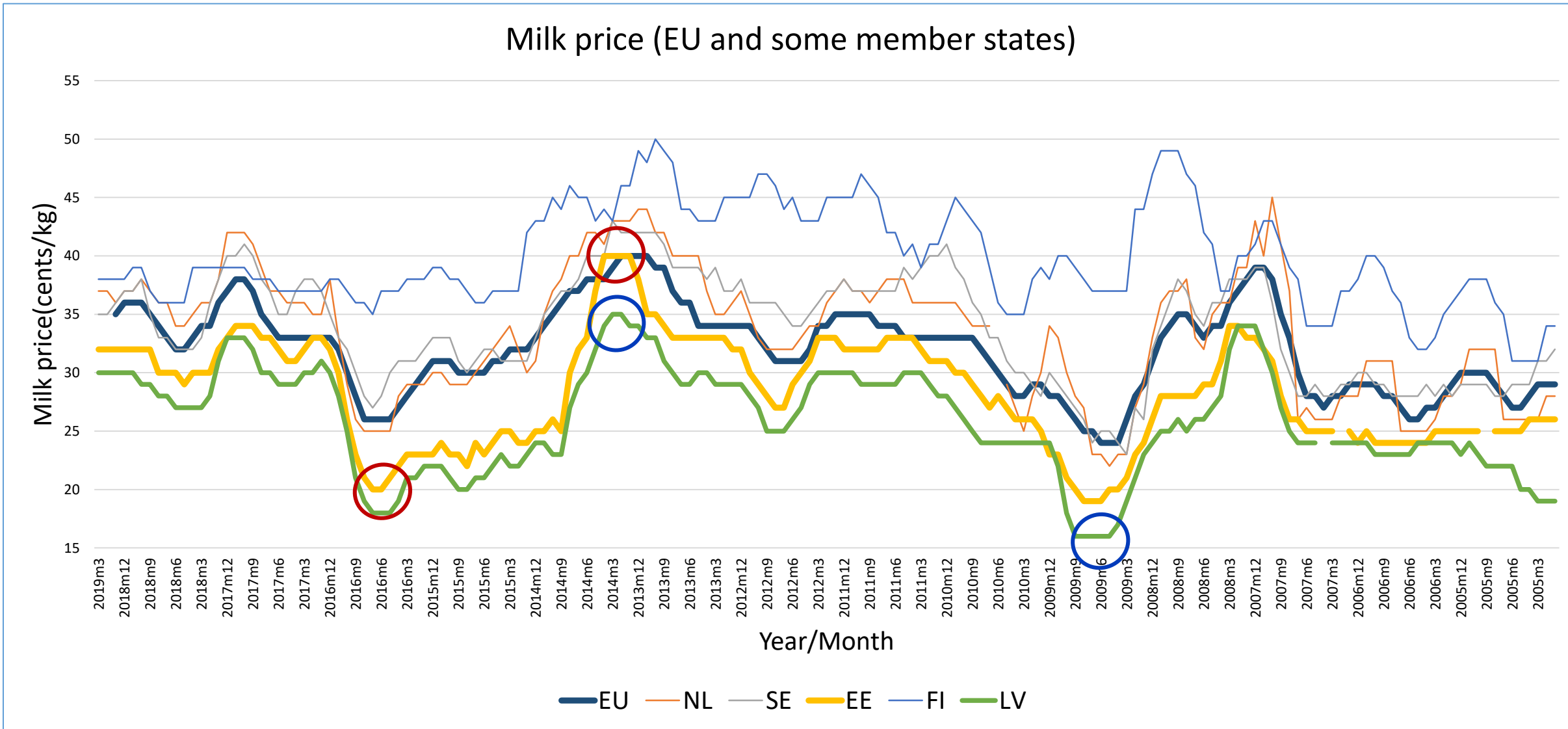
Operating costs US\$ per 100 kg of milk (USDA, ERS, Dairy data)

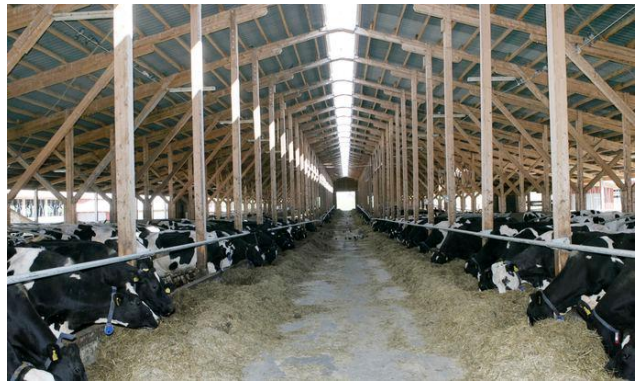
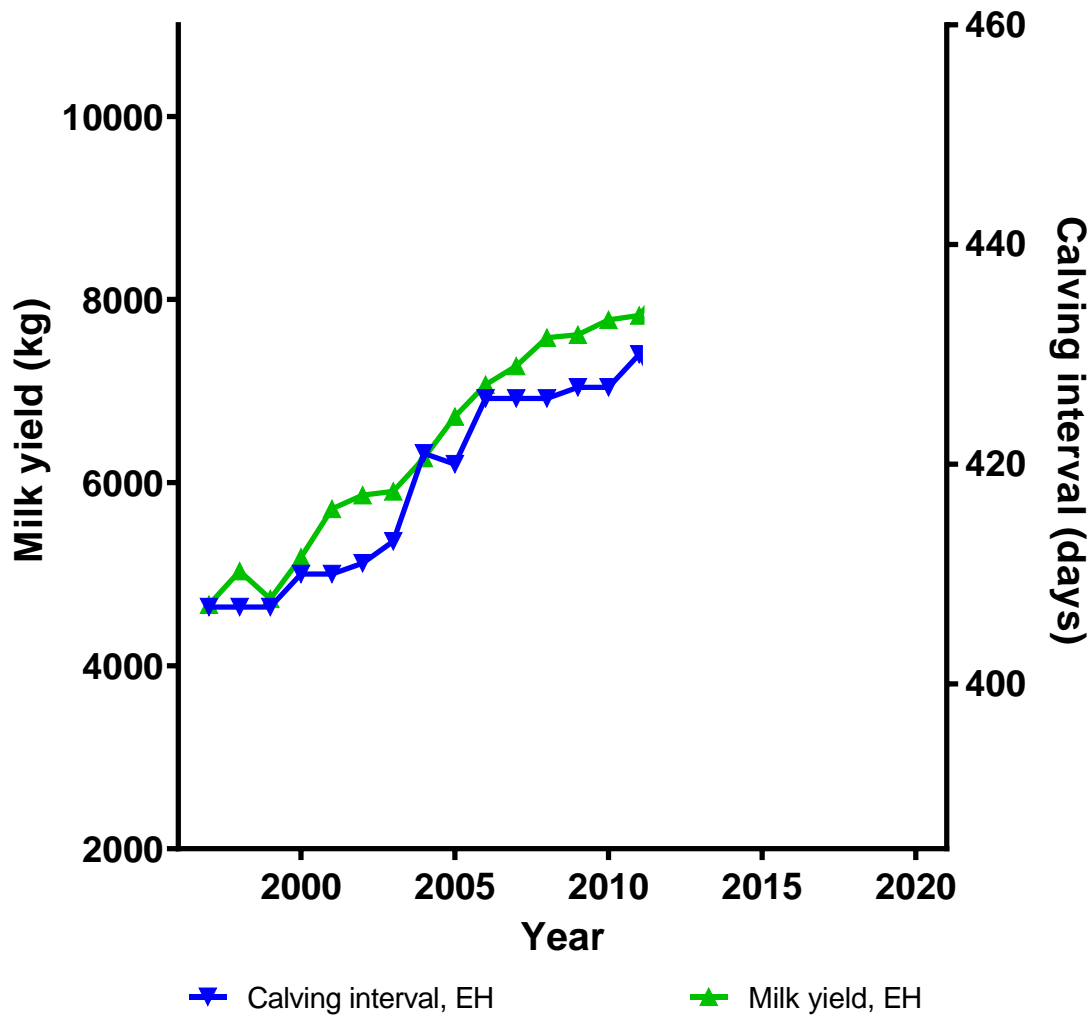


Relationship between herd size and milk yield in Estonia



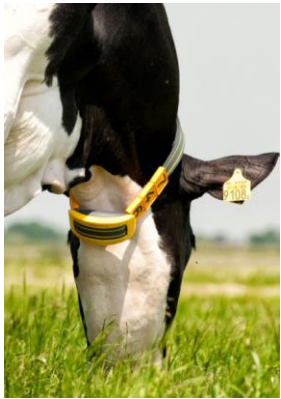
Volatility in milk prices: 2x difference!





Better feeding and environment

Better bulls to improve cow fertility



New herd management technologies

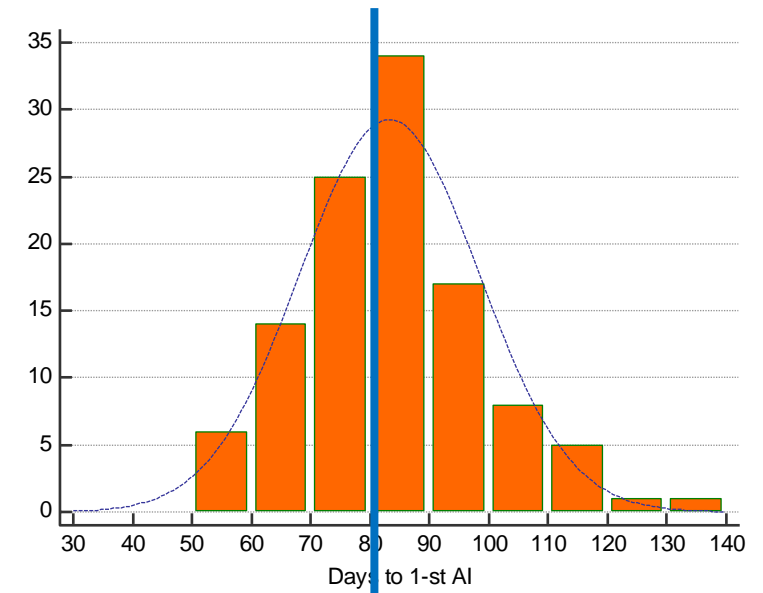
Use of oestrous stimulation and ovulation synchronization



Smith and Becker:
 1 day calving interval > 390 d cost 1.50 €

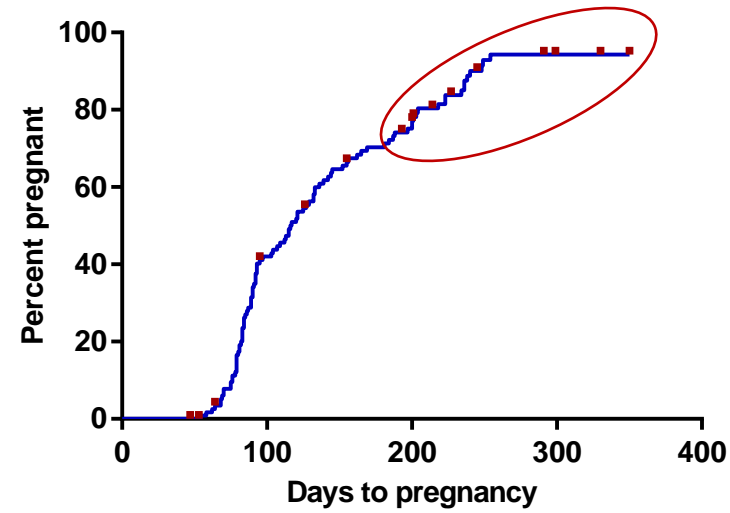
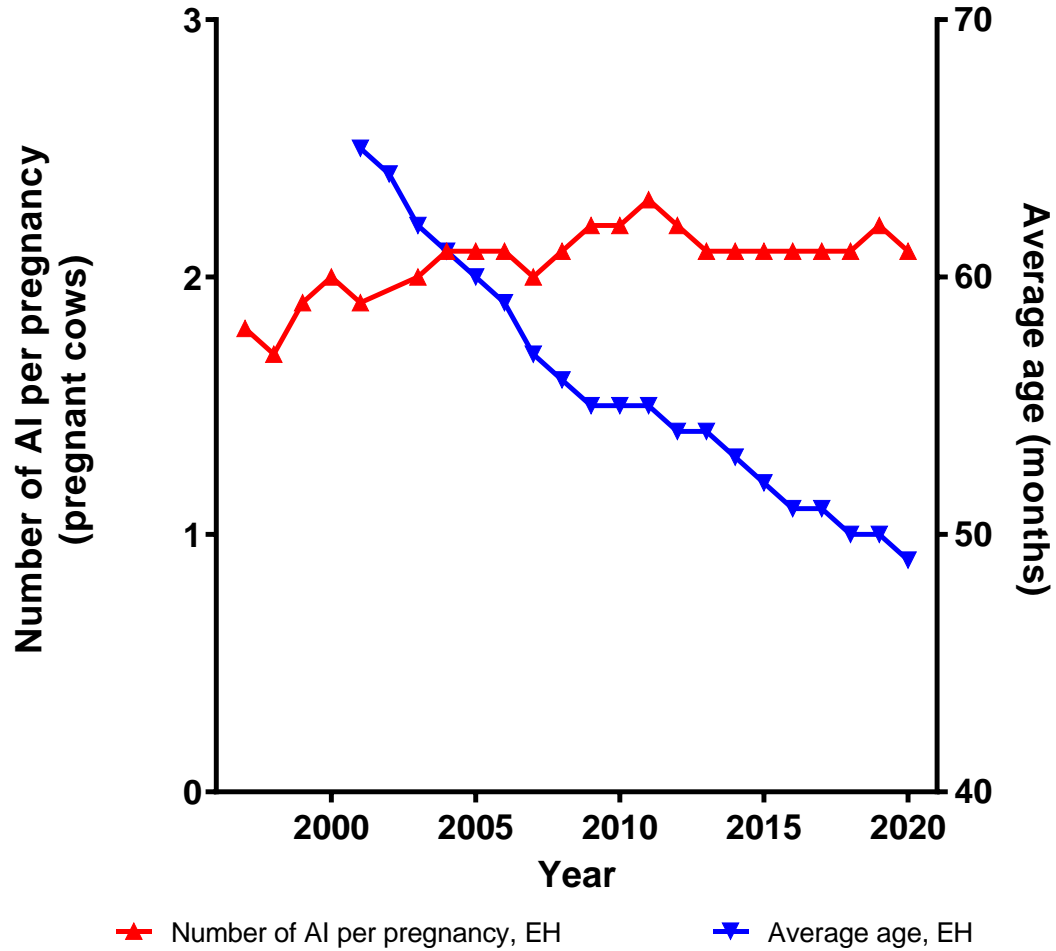
Fig. A. Valdmann
 Data: Estonian Livestock Performance Recording Ltd

Oestrous and ovulation synchronization



FERTILITY AND LONGEVITY

Don't forget the proportion served which failed to conceive and were culled



Personal data A. Valdmann

Fertility has not improved
Longevity is declining

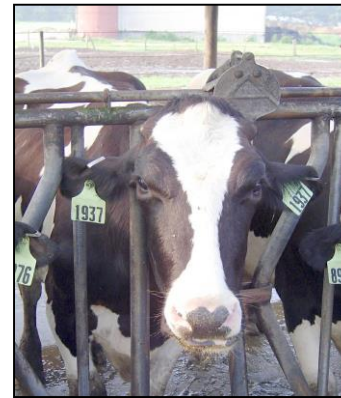
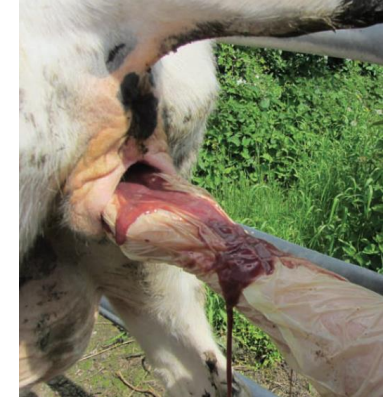
Data from



Fig. A. Valdmann

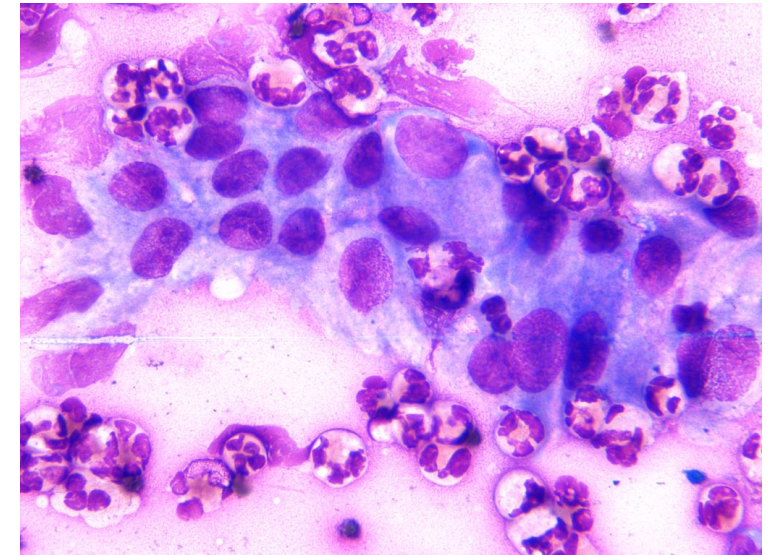
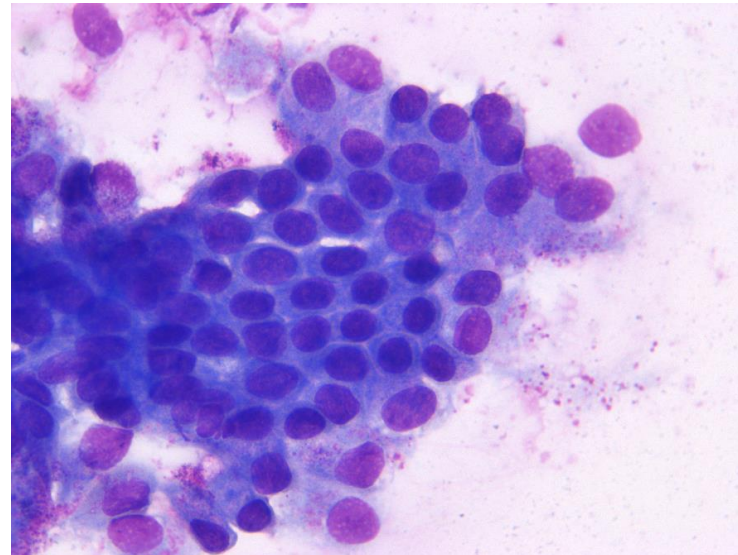
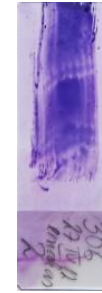
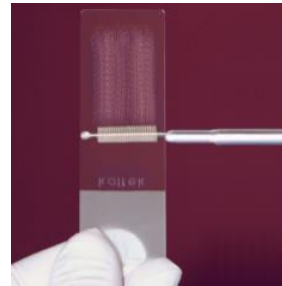
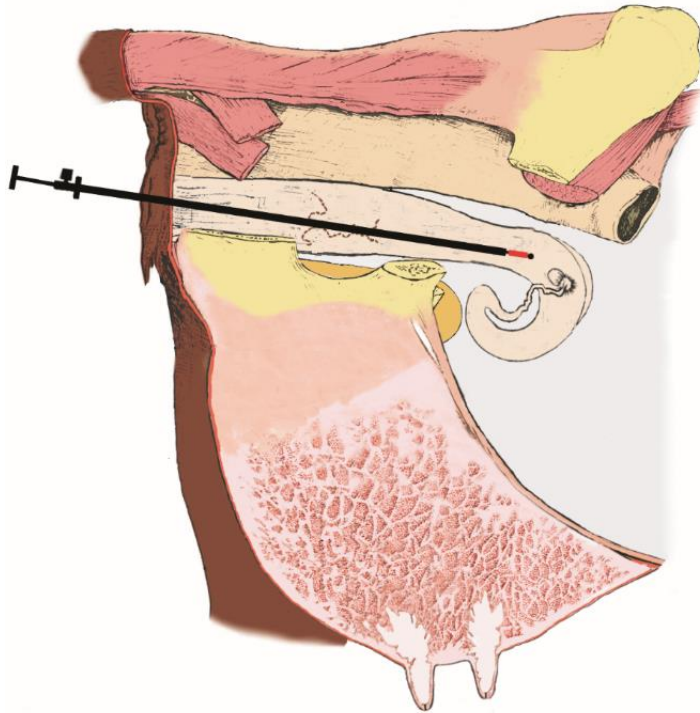
45 to 71% of dairy cows experience calving-related disorders and clinical diseases

- Twins
- Difficult calving
- Retained placenta
- Metritis/clinical endometritis
- Mastitis
- Hypocalcaemia
- Ketosis
- Severe lameness



(Macmillan et al., 2020; Monteiro et al., 2020; Piechotta et al., 2015; Ribeiro et al., 2016)

30% of dairy cows experience cytological endometritis



70-75% of all clinical diseases
are diagnosed in the first
month after calving

(LeBlanc et al., 2006; Carvalho 2019)

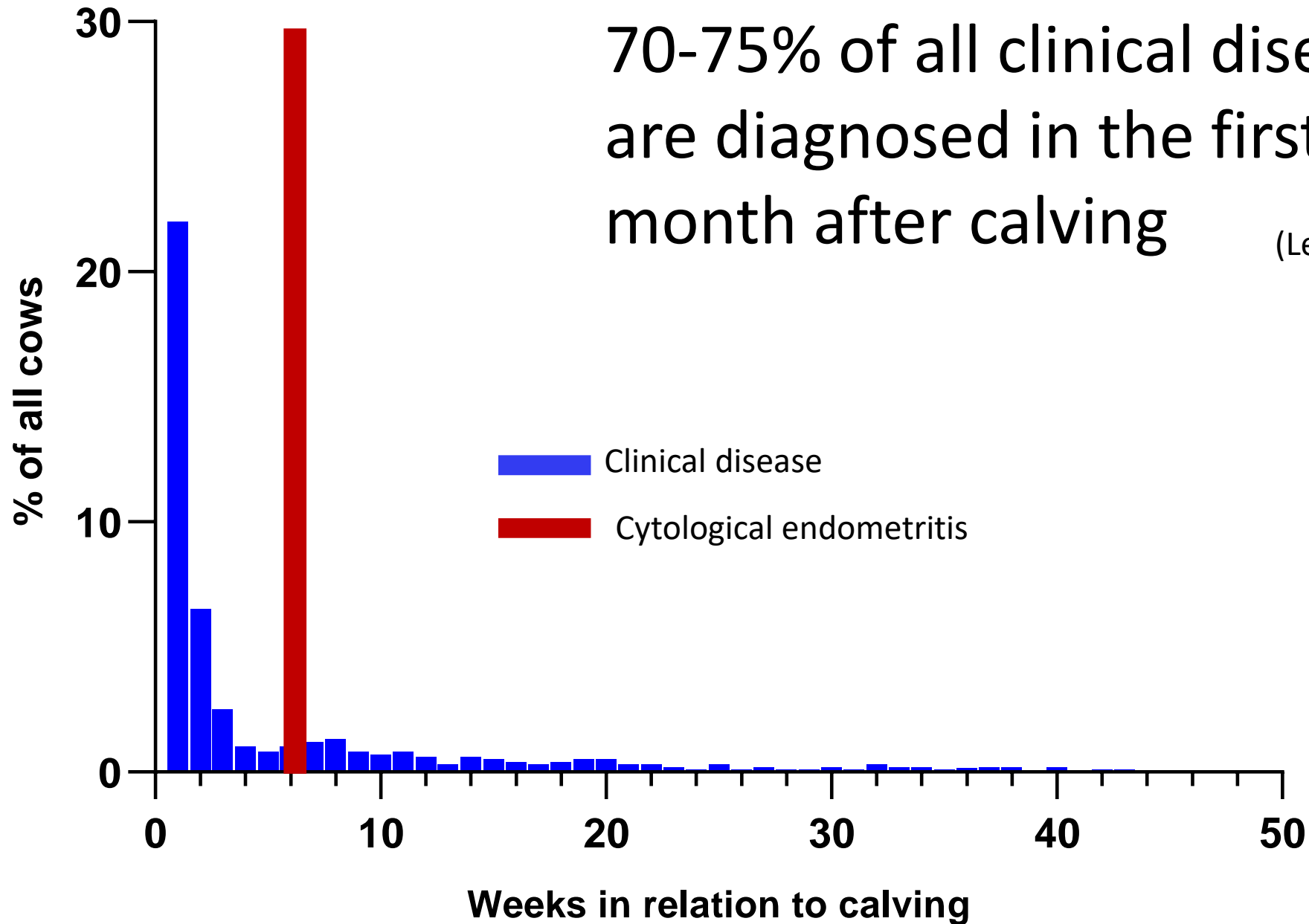
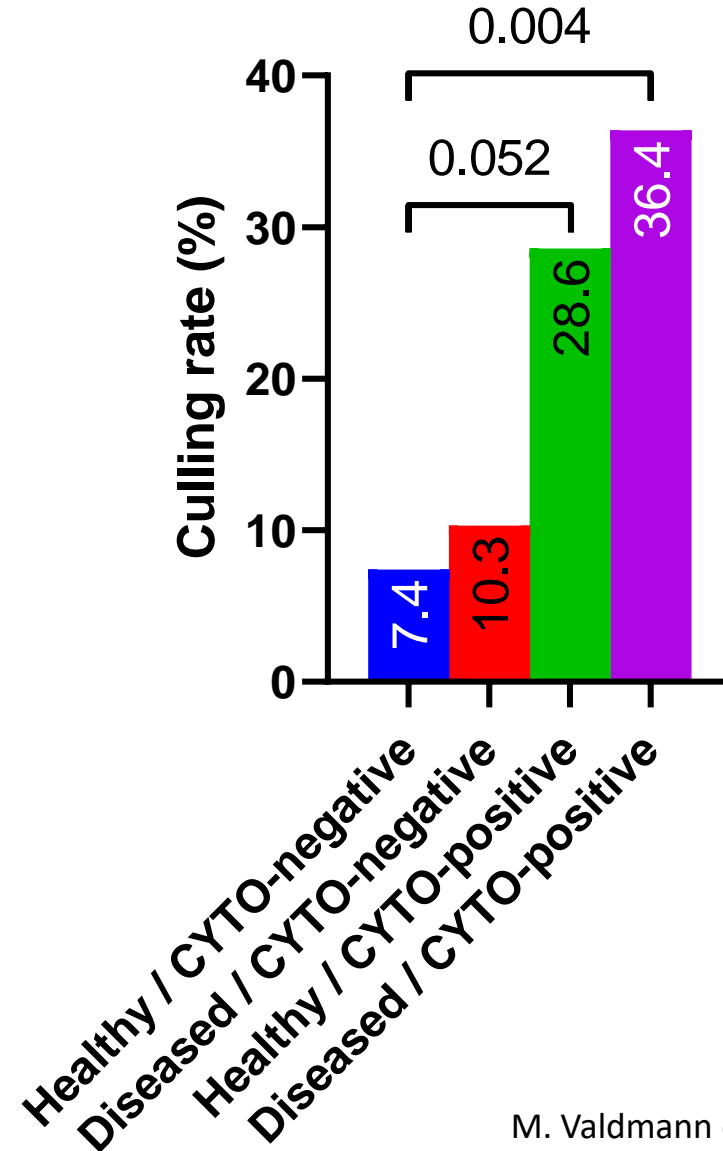
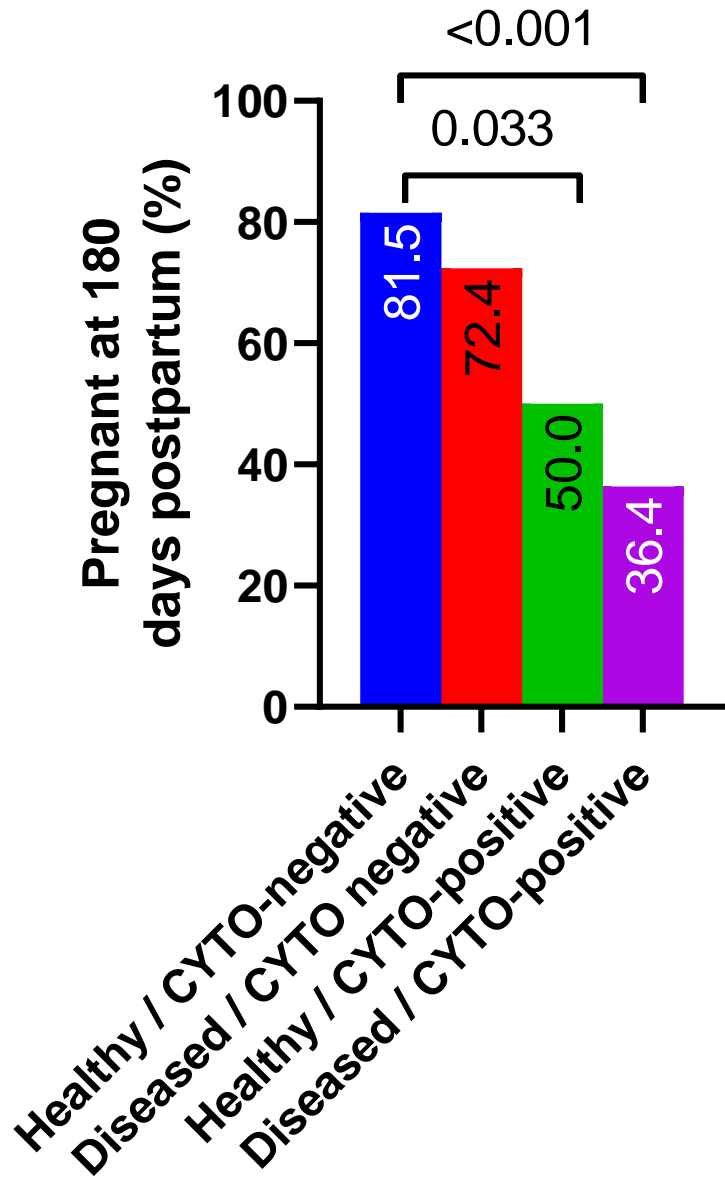


Fig. A. Valdmann

What are the far-reaching effects of clinical disease and CYTO on fertility and culling?



CONCLUSIONS

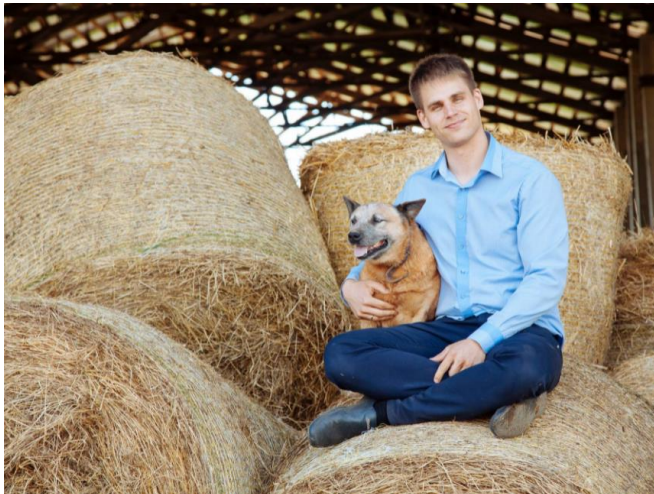
- Dairy farms become bigger and the number of farms is decreasing
- Low milk price and volatility in milk price (economic uncertainty) is one of the main drivers for the decline in the number of smaller farms
- Large dairy farms and cows with high milk yields are more cost-effective
- Cows with high milk production emit less greenhouse gases per unit of production

CONCLUSIONS

- Dairy cow longevity is declining and is approaching to alarmingly low level
- A large proportion of dairy cows experience calving-related disorders and clinical diseases
- Cytological endometritis in combination with clinical diseases exert strongest carry-over effects to reduce fertility and increase culling risk
- Researchers, breeders, veterinarians and dairy farmers need to work together to find ways to breed and keep high-yielding cows so that they are healthy, fertile and stay in the herd for long time

Hopefully we do not reach a situation when we can say that this has happened once upon a time

Happy young farmer
with happy cows



Paldies!

