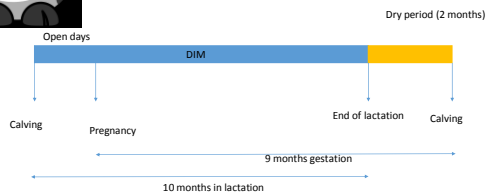






BACKGROUND

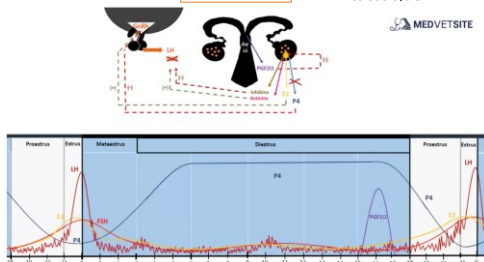
Cows' production cycle



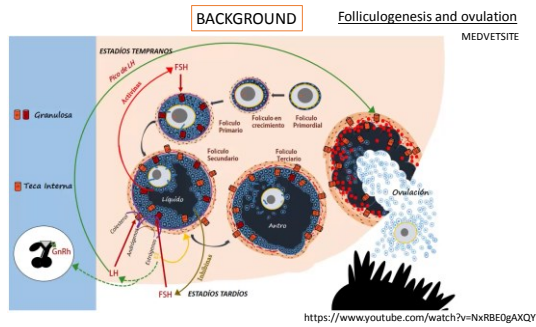
BACKGROUND

Estrous cycle

MEDVET SITE



<https://www.youtube.com/watch?v=YqHicERwUJ>



INTRODUCTION

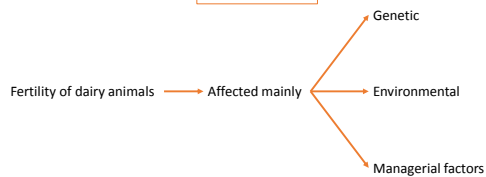
Why fertility is important?

Effect of infertility → Profitability

- Prolonged calving interval with fewer calves and less milk per cow
- Increased replacement costs
- Increased labour, semen and veterinary bills
- Extended low production or dry period which increases BCS (body condition score) at calving and also reduces fertility at the subsequent breeding season

Roche J.F. et al. (2006)

INTRODUCTION



Poor reproductive performance → Intensification of production
Increased milk production

Ibtisham F. et al (2018)
Butler WR. (2000)
Lucy MC. (2001)
Lean I. et al. (2008)
Berry DP. et al. (2014)

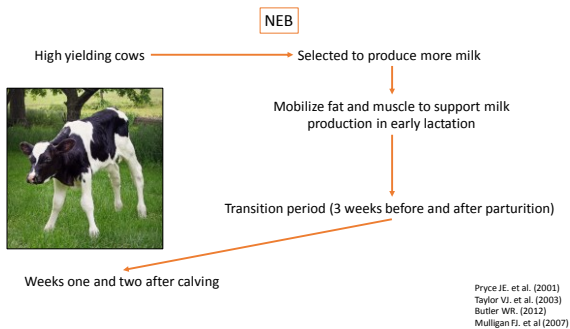


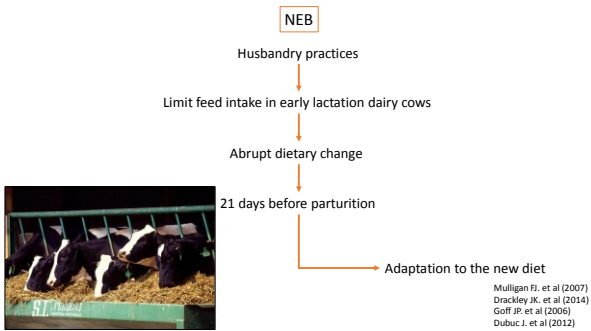


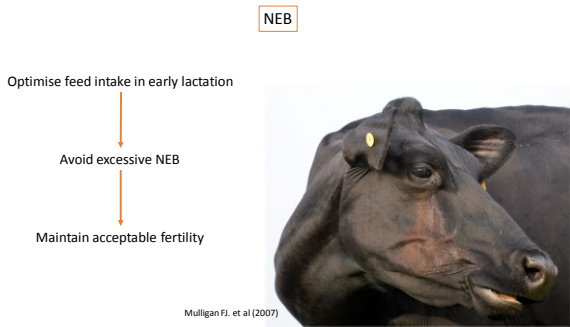
NEB

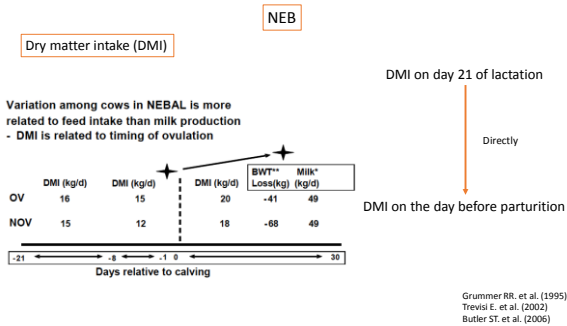
Negative Energy Balance



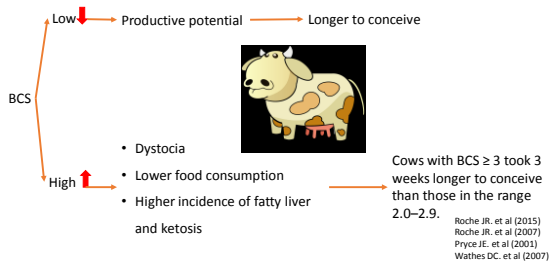




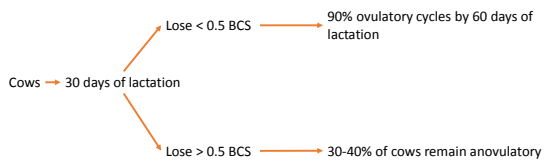




Body Condition score (BCS)



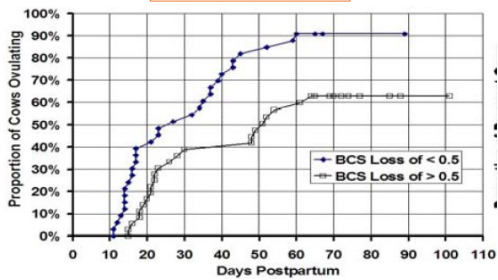
Body Condition score (BCS)



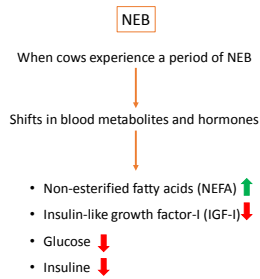
Conception rate decreases about 10% per 0.5 unit BCS

Butler WR, et al (2001)
Butler WR, et al (2012)
Santos JEP, et al (2009)

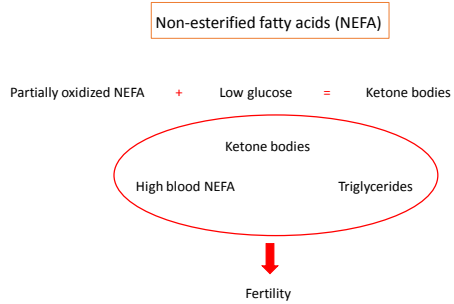
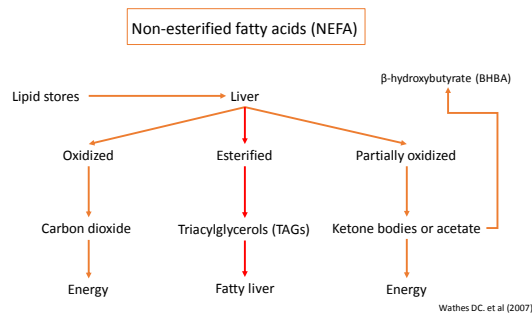
Body Condition score (BCS)

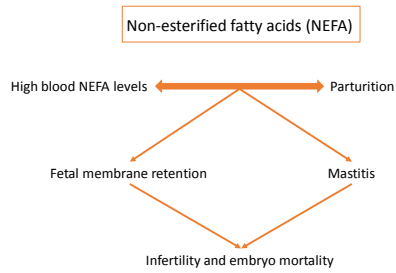


Butler WR, et al (2012)

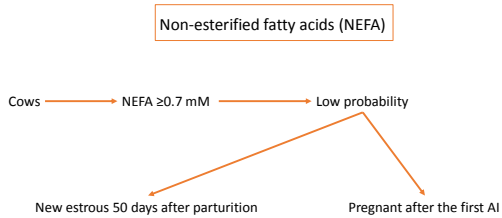


Ibtisham F. et al (2018)

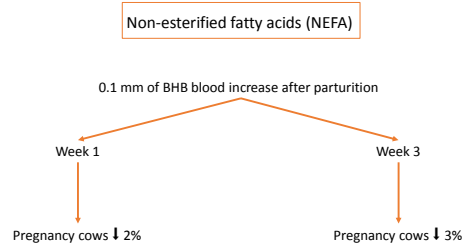




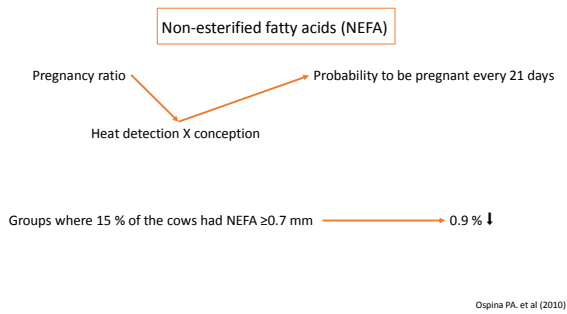
Melendez P. et al (2009)
Pinedo PJ. et al (2009)

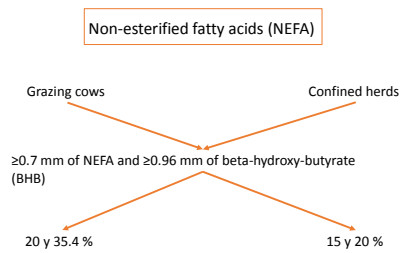


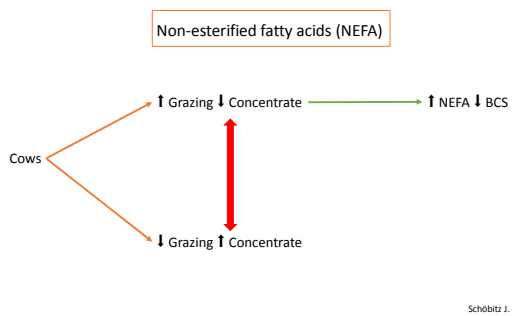
Ospina PA. et al (2010)
Chapinal N. et al (2012)

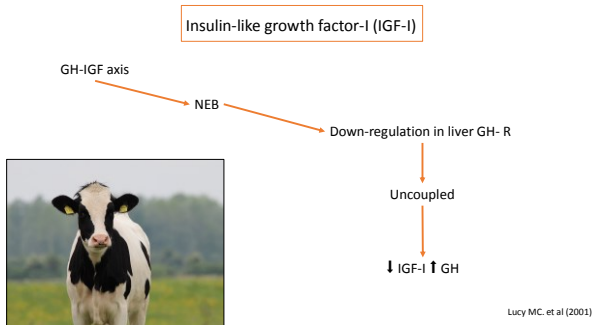


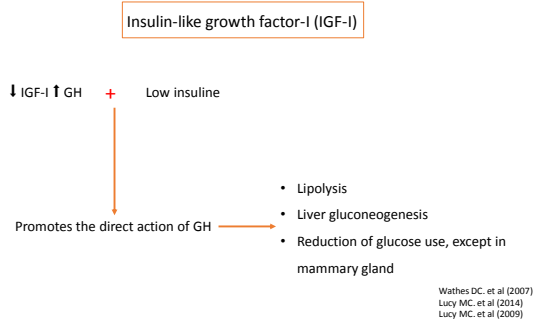
Wathes DC. et al (2012)

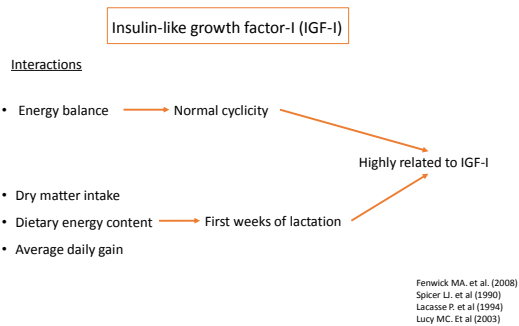


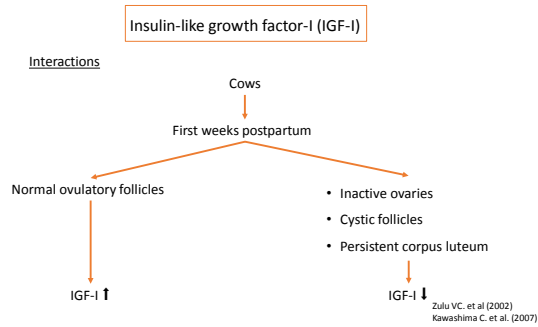


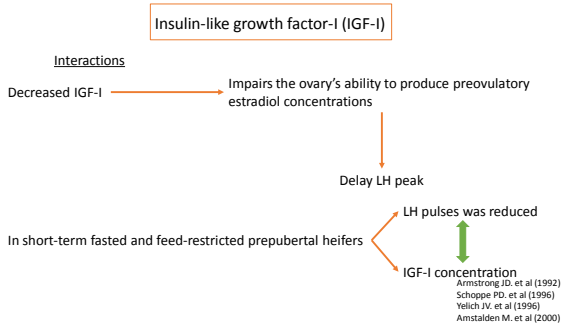


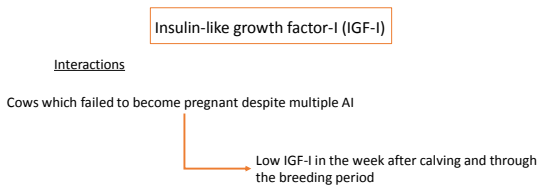












Taylor VJ, et al (2004)

Insulin-like growth factor-I (IGF-I)

Be careful!

Moderate decreased dietary intake reduced the size of large follicles without affecting IGF-I concentrations

Plasma

Follicular fluid

IGF-I concentration → Numbers of ovarian follicles during follicular waves

Spicer LJ, et al (1991)
Burns DS, et al (2005)

Insulin-like growth factor-I (IGF-I)

Effect on ovarian activity



Circulating IGF-I concentration ↔ IGF-I concentration in follicular fluid

Bilby TR, et al (2004)
Bilby TR, et al (2006)

Glucose

Ruminants → Permanent state → Liver gluconeogenesis

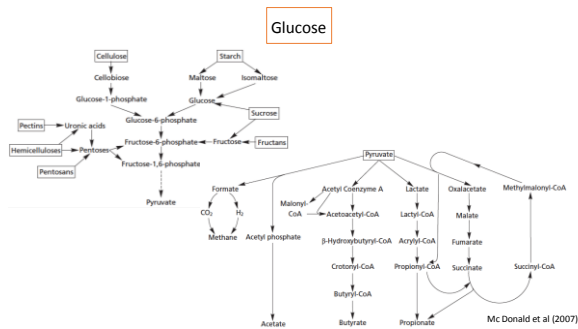
Rumen → Carbohydrates → Volatile fatty acids

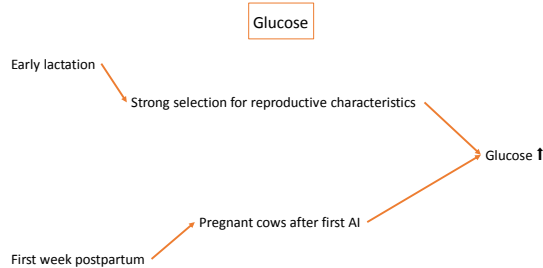
Propionate

Liver

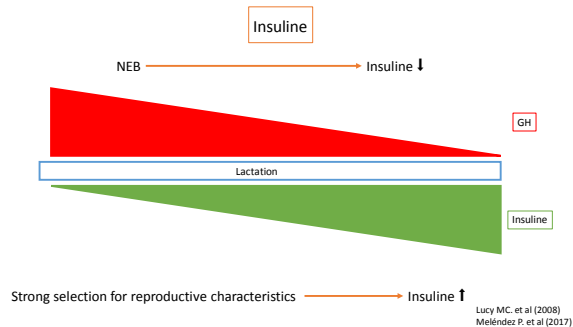


Meléndez P, et al (2017)



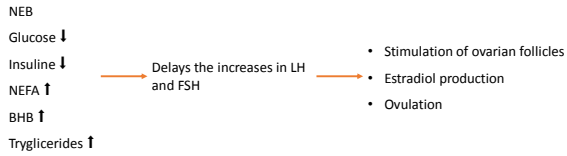


Moore SG, et al. (2014)
Garverick HA, Et al. (2013)



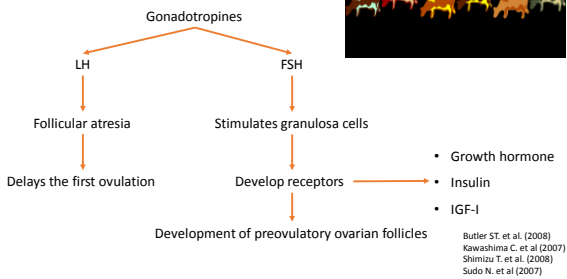
Lucy MC, et al (2008)
Meléndez P, et al (2017)

Ovarian

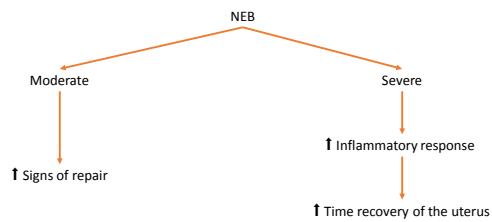


Butler ST. et al. (2006)

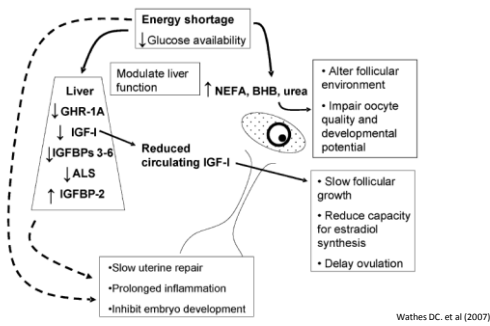
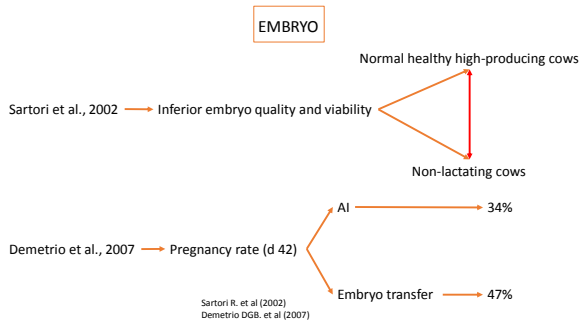
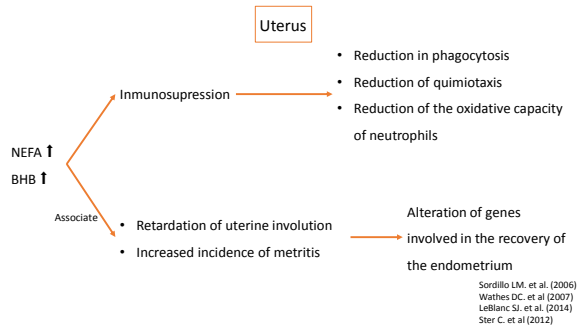
Ovarian



Uterus



Wathes DC. et al (2009)



Conclusion

- Nutrition => Dairy cows' reproductive efficiency
- Availability of nutrients <= immediate, but also endogenous body tissue reserves
- NEB: major factor in reproduction!
- All other components altered by NEB: only analyze as an association and not as a cause-effect factor
- Good nutritional practice => enhance reproductive performance of the herd

