Fitting Cows To Your Operation

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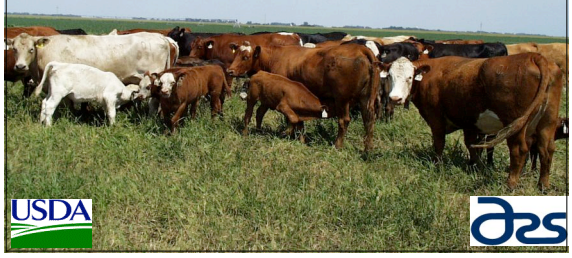


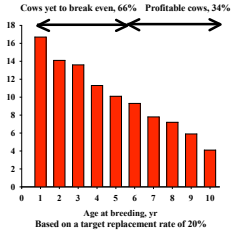
$$\text{Efficiency} = \frac{\text{Outputs}}{\text{Inputs}}$$

Factors affecting cow efficiency

- Feed efficiency
- Production life

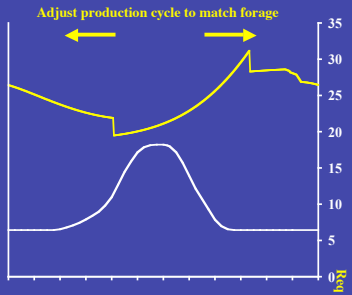
Low Production Life

- Decreases herd profitability
- Increases replacement heifer cost
- Slows genetic improvement

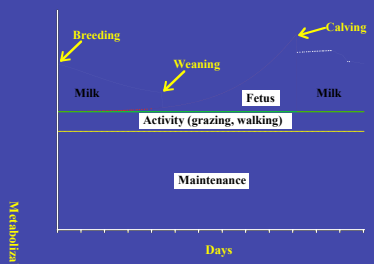


Contributors to production life

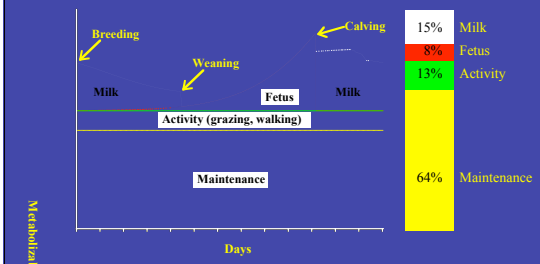
- Fertility
- Weight of calf weaned
- Udders structure/health
- Feet and leg structure/health
- Dental wear
- Temperament



Annual metabolizable energy requirement



Annual metabolizable energy requirement



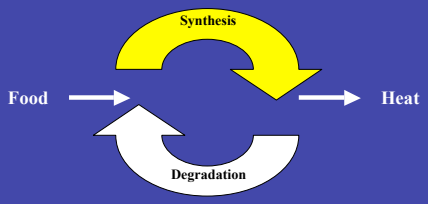
A cow is at maintenance when she is neither gaining or losing energy (No change in body weight)

Inputs (feed energy) = Outputs (heat energy)

Factors affecting maintenance

- Cow size
- Milk production potential
- Genetics

Tissues in the cow's body are constantly being degraded and synthesized

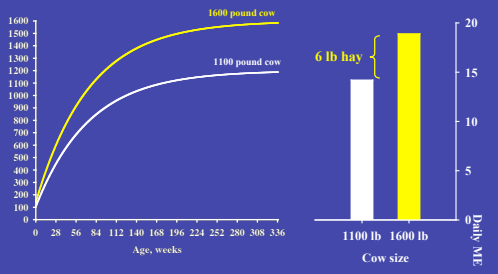


Synthesis and degradation are not 100% efficient

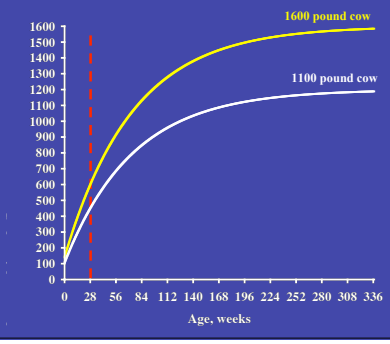
The more tissue that is maintained, the more food energy is required to maintain the tissue

Bigger cows take more feed to maintain their weight

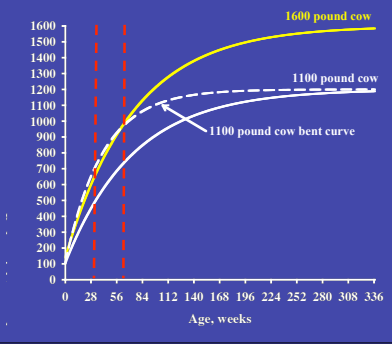
Increased cow size increases maintenance requirement



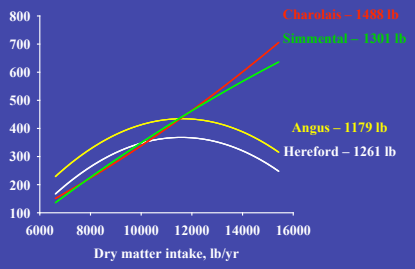
Selecting bigger cows to increase calf weaning weights will increase cow size and increase the amount of feed required to maintain a cow



Bending the growth curve

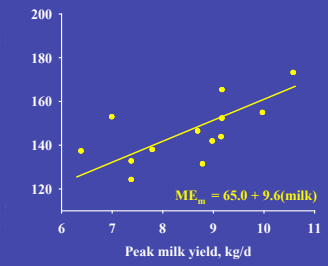


Big cows are not bad
(Desirable cow size depends on available resources)



Jenkins and Ferrell, 1994

Increased milk potential is correlated with an increased maintenance in non-pregnant, non-lactating cows



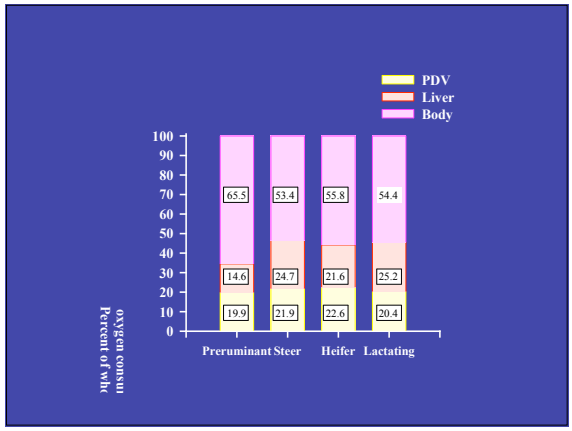
Ferrell and Jenkins, 1987

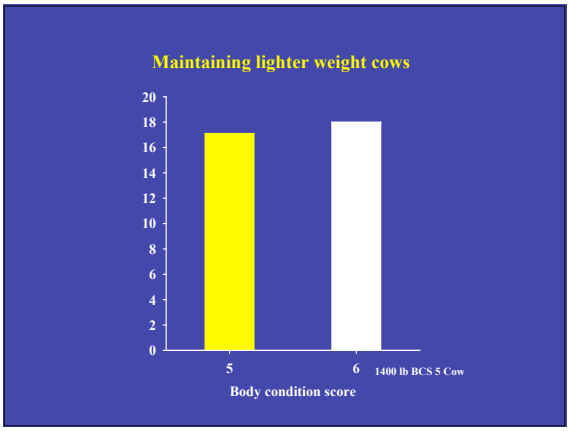
A five pound increase in peak milk yield is correlated with an ~17% increase in maintenance

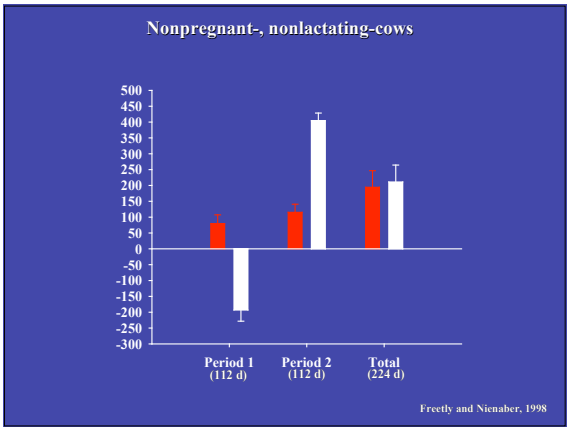
Metabolic energy required for maintenance of nonpregnant, nonlactating mature cows

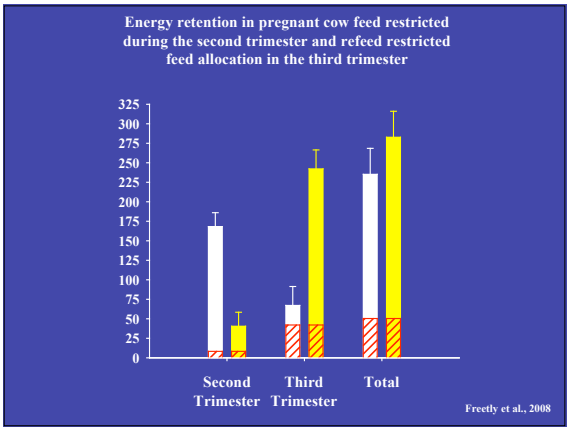
Breed Cross	Daily Maintenance kcal/kg$^{0.75}$
Angus-Hereford	130
Charolais – X	129
Jersey – X	145
Simmental - X	160

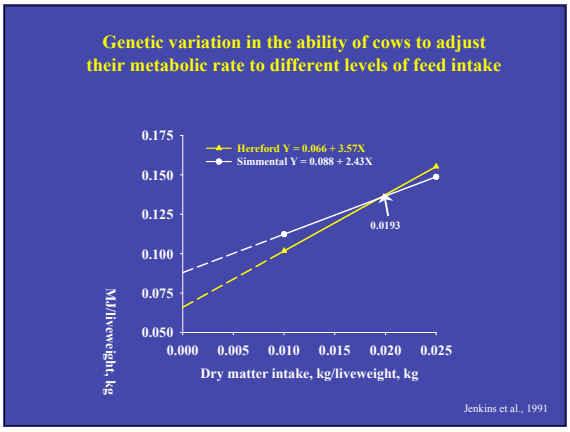
Ferrell and Jenkins, 1984

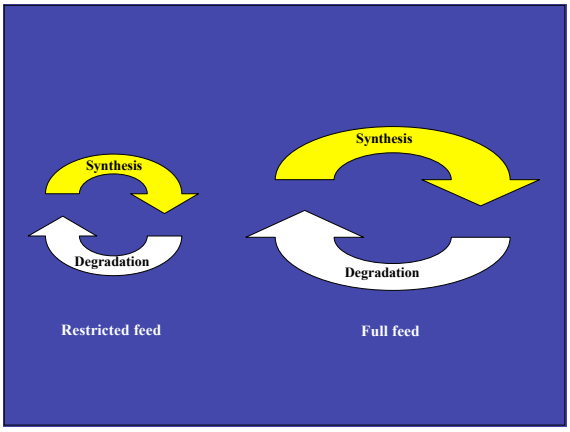


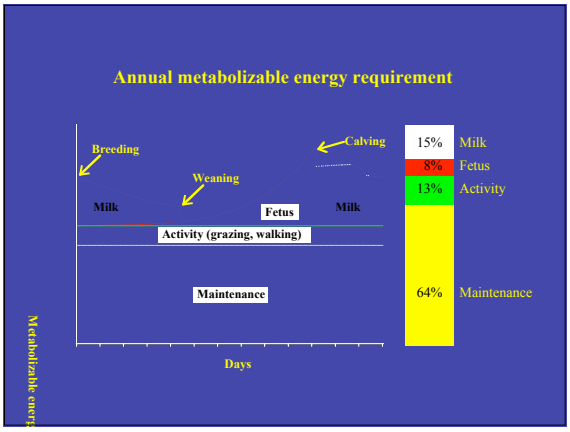








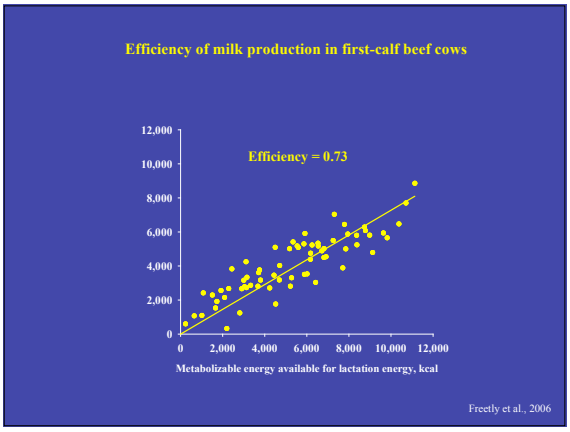


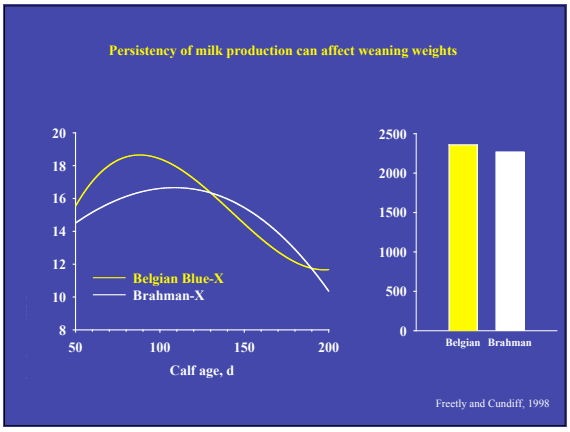


Milk

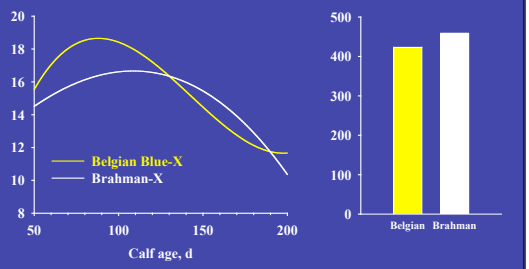
- Milk yield
- Persistency of lactation

Feed required by the cow increases with increased milk





Persistency of milk production can affect weaning weights



Freetly and Cundiff, 1998

There is considerable biological diversity among cows for maintenance and milk production

Development of marker-assisted technologies offer an opportunity to select cows for difficult to measure traits like maintenance

Fitting cows to your operation requires defining your resources and market end points, and then fitting the biological type to your environment

A good cow in one production environment may not be a good cow in another environment

Take advantage of the diversity that different types of cows offer in establishing a cow herd