



## A closer look at weaning in beef cattle.

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Cattle are a herd species!  
Isolation causes distress.



Cattle are stoic and try not to advertise their pain and vulnerability.





If given the chance a newly weaned calf would leave the pen and its herd mates, walk alone, calling non-stop in an effort to reunite with its mother!



**Weaning represents the single greatest stressor we impose on calves.**

Weaning creates immuno-compromised individuals.

More calves are treated for disease and health reasons immediately post weaning (on arrival at the feedlot) than any other time in their lives.

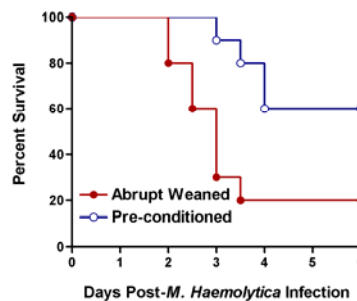
Weaning causes visible changes in behaviour and overt signs of distress that last for 3-5 days.

Weaning cause a noticeable set back in performance



## Effect of Weaning Stress on Disease Susceptibility (*Hodgson et al., 2012 Vet Res 43:21*)

Weaned versus Pre-conditioned  
AS# 04-216  $p < .01$



Mean survival time for animals dying in each group were significantly different ( $p < 0.01$ )

Abrupt Weaned:  $2.7 \pm 0.5$  days (mean  $\pm$  1 SD)

Pre-conditioned:  $3.7 \pm 0.5$  days (mean  $\pm$  1 SD)



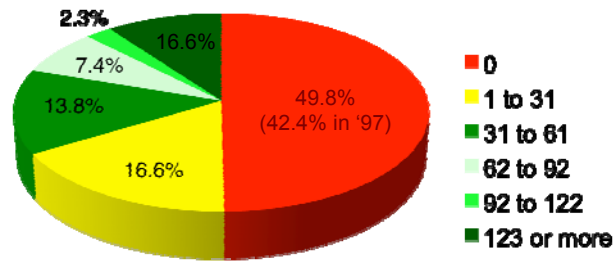
## Advantages and Disadvantage of pre-conditioning

Advantages - Weaning calves on the ranch (preconditioning) before transporting to a feedlot results in improved health and performance during the subsequent receiving and feeding period compared to calves weaned and transported immediately. (*Step et al., 2008. J Anim Sci.*)

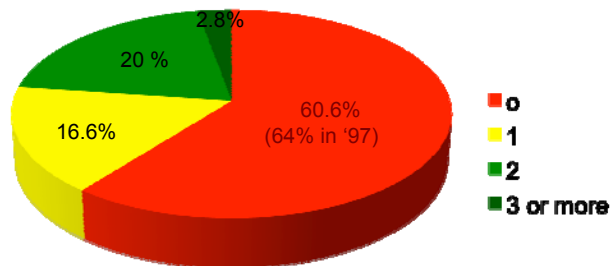
Disadvantage - Preconditioning calves improves feedlot health and gain, but may not increase postweaning profitability. (*Mathis et al., 2009*)



Percent of operations by number of days  
weaned calves were held before sale  
(USDA 2007-2008).



Percent of operations by number of times  
calves were vaccinated for respiratory  
disease before sale (USDA 2007-2008)..





## Estimated Treatment rates for cattle at feedlots

Somewhere between 10-25% of feedlot cattle treated for bovine respiratory diseases (NAHMS: 2000).

Prophylactic treatment with Micotil, or the newer Draxxin, on arrival reduces treatment rates < 10%.



## Potential Stressors Associated with Traditional Weaning

- 1) Age at weaning is younger than natural age.
- 2) New social environment:
  - absence of adults
  - mixing of unfamiliar animals
  - formation of new social hierarchy
- 3) Physical separation of mother and calf
- 4) Premature end of lactation (even though milk still available)
- 5) Transportation
- 6) New location
- 7) New diet



## Is age at weaning a factor?

Natural age of weaning in cattle was found to be 8.8 months in heifers and 11.3 months in bull calves (Reinhardt and Reinhardt, 1981).



In sheep, once milk production drops below threshold, weaning occurs (Arnold et al., 1979).

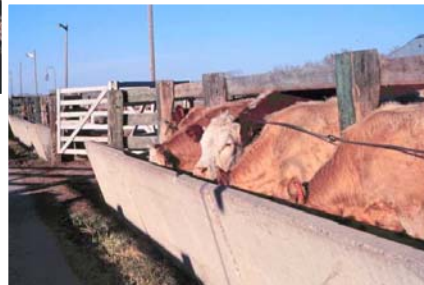


## Could stress of weaning be reduced in presence of adults?



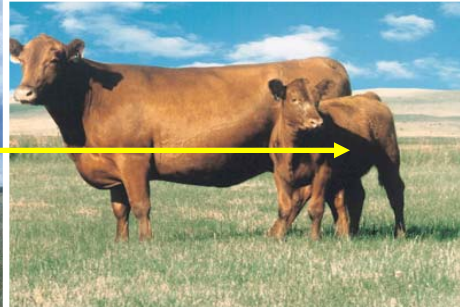
Would “trainer cows” help?

We found no advantages (and some disadvantages) of using trainer cows. (Gibbs et al., 2000)





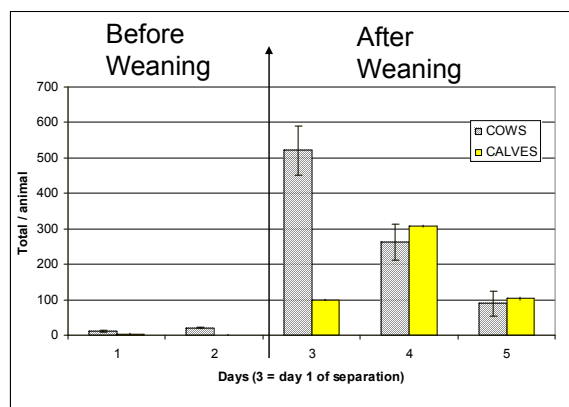
## Could stress of weaning be reduced in presence of familiar adults?



What if calves were weaned in the presence of herd mates?



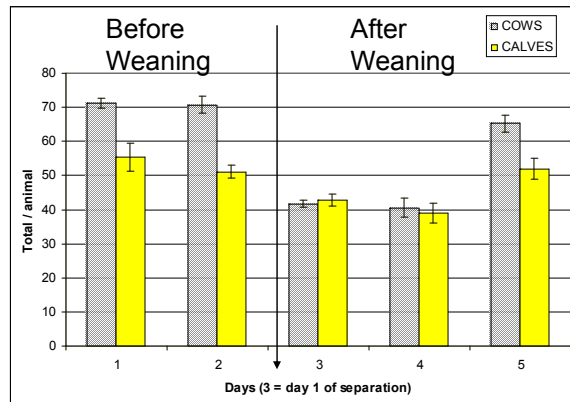
## Response to Weaning



Average number of calls by cows and calves 2 days before and 3 days after weaning in the presence of herd mates.



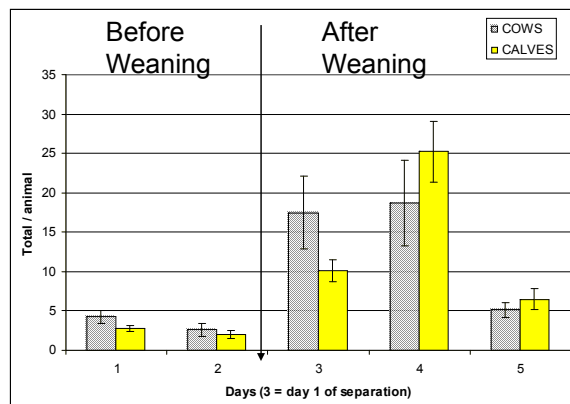
## Response to Weaning



Average number of times cows and calves observed eating 2 days before and 3 days after weaning in the presence of herd mates.



## Response to Weaning

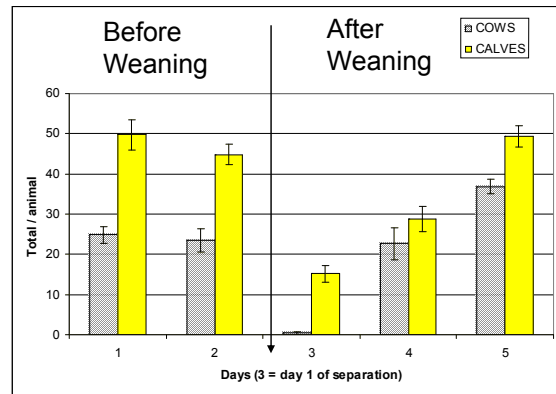


Average number of times cows and calves observed walking 2 days before and 3 days after weaning.





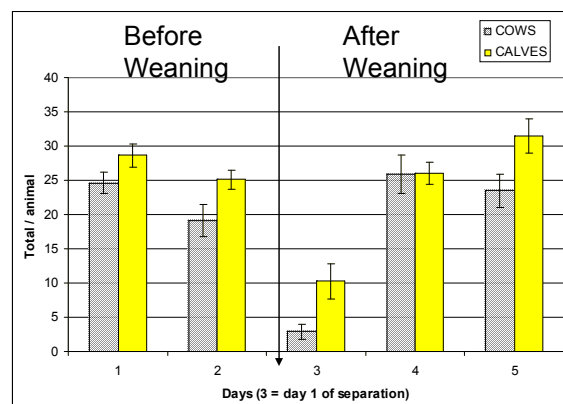
## Response to Weaning



Average number of times cows and calves observed lying, 2 days before and 3 days after weaning in the presence of herd mates.



## Response to Weaning



Average number of times cows and calves observed ruminating 2 day before and 3 days after weaning in the presence of herd mates.



## Does Fence Line Weaning Reduce Weaning Stress?



Foals show a reduction in weaning stress following fence-line weaning (*McCall et al., 1985*).



## Fence-line weaning in elk



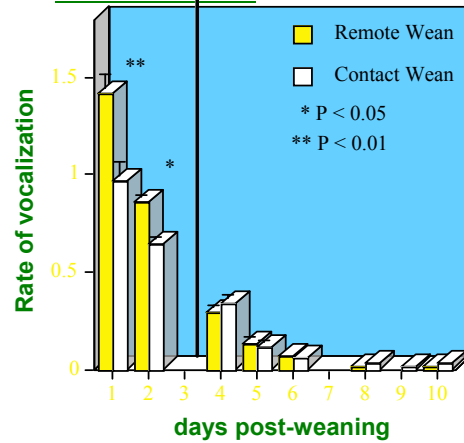
Fence-line weaning reduced weaning stress (*Haigh et al., 1997*)





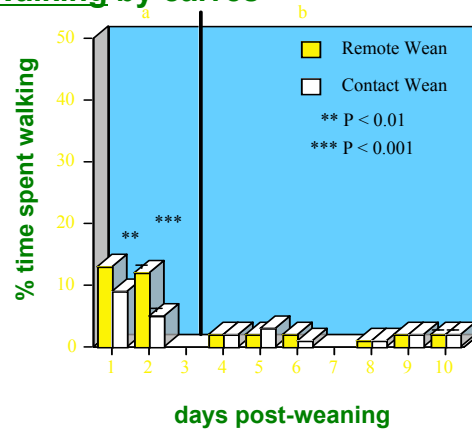
## Fence-line weaning beef cattle reduces calling

### Calf vocalizations



## Fence-line contact also reduces walking by calves

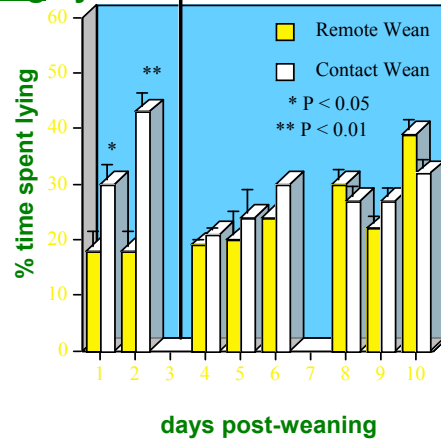
### Walking by calves



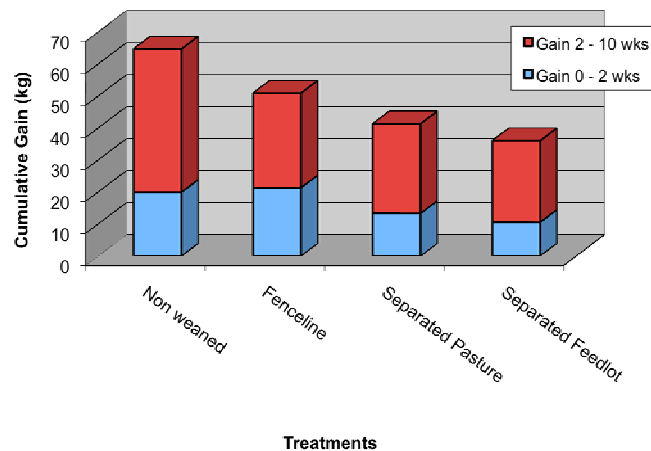


## Lying time increases with fence-line contact

### Lying by calves



## Performance of calves following fenceline weaning (Price et al., 2003)





“Is weaning stress more to do with calves missing the milk or missing their mother?”

*(Derek Haley)*



One way to answer the question would be to take away the milk, but leave the mother!



Answering the question led to the discovery of  
Two-Stage Weaning!



## Stage 1 – turn off the milk supply



By using an anti-sucking device calves are unable to nurse.



## Stage 2 – Separate pairs after 3-7 d





## Calling by calves

CALLS / DAY



DAYS



## Calling by calves

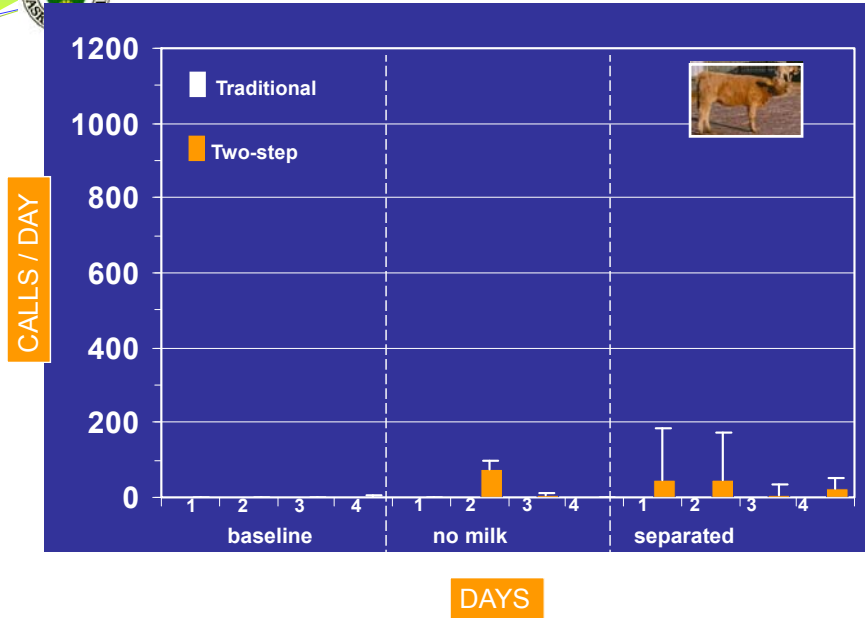
CALLS / DAY



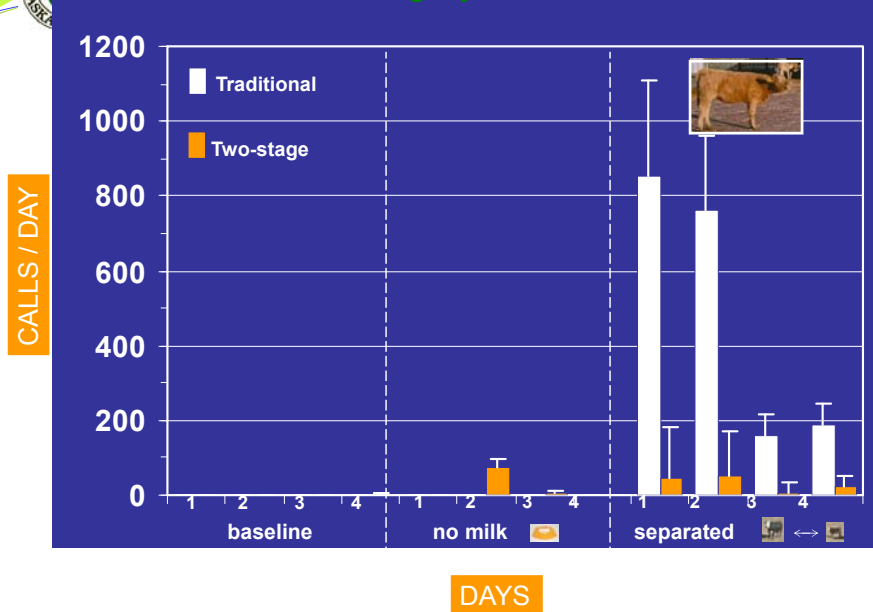
DAYS



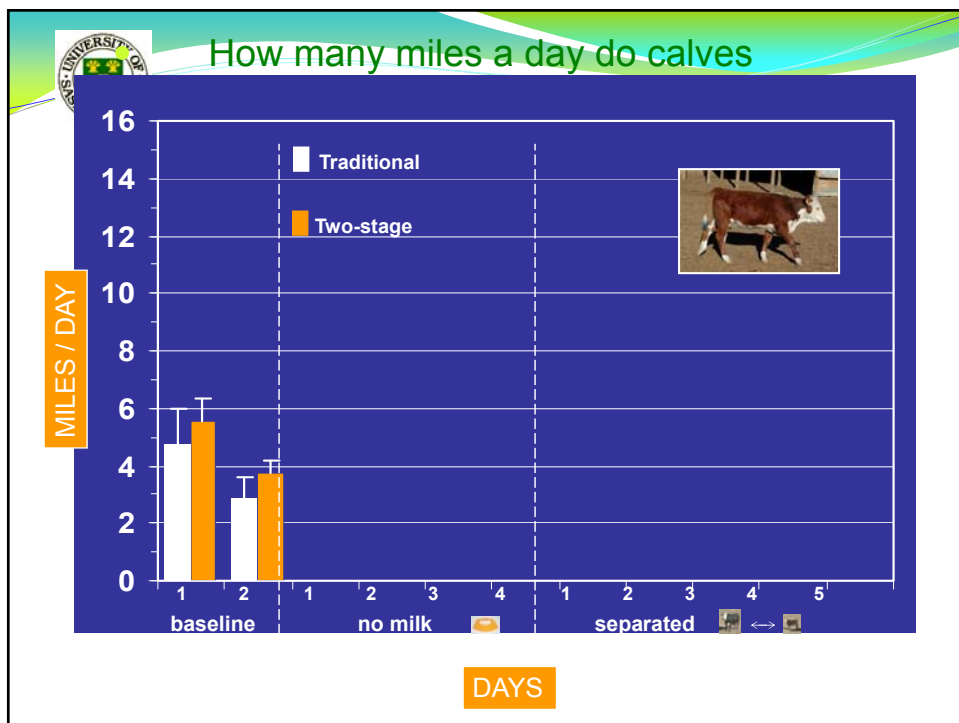
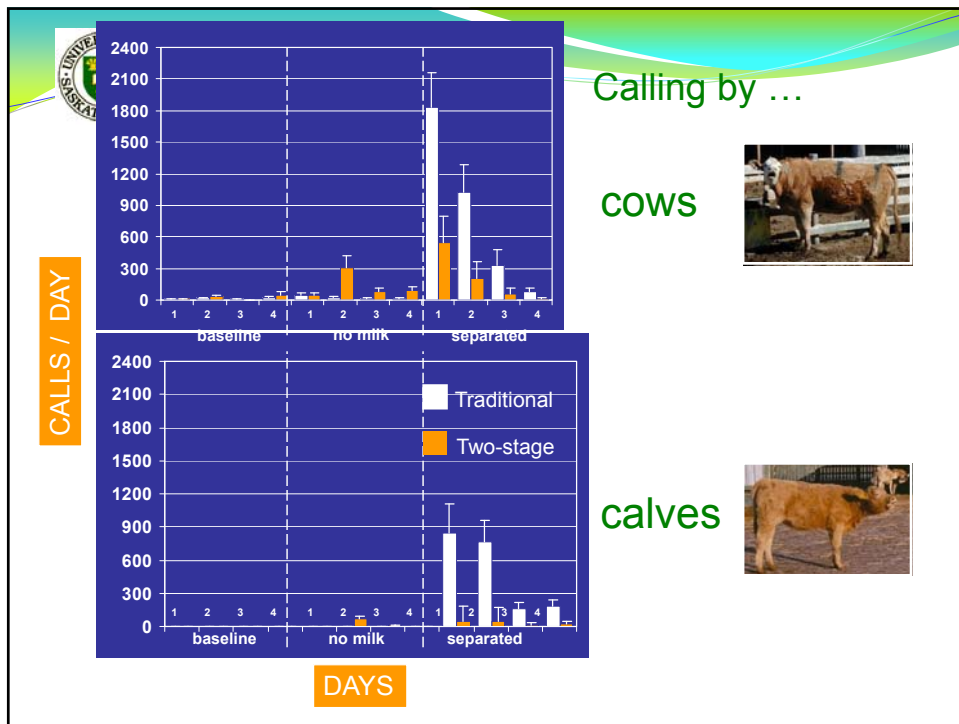
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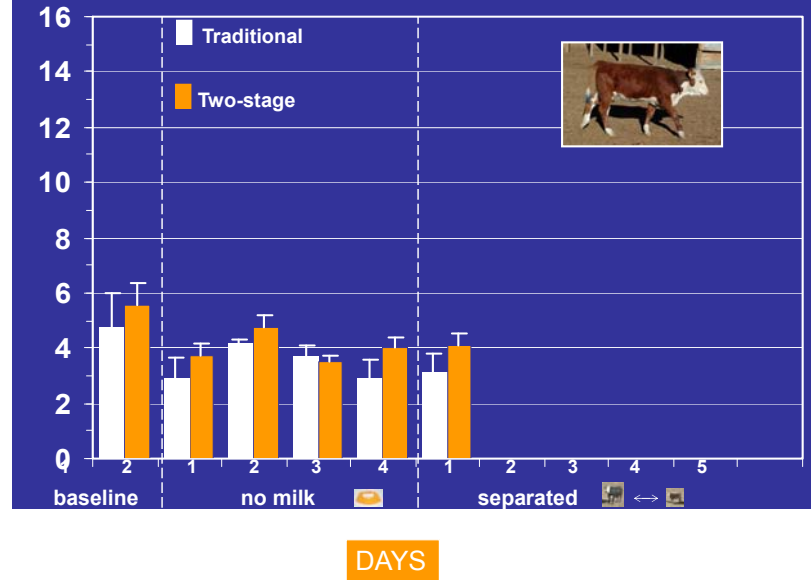






## How many miles a day do calves walk?

MILES / DAY

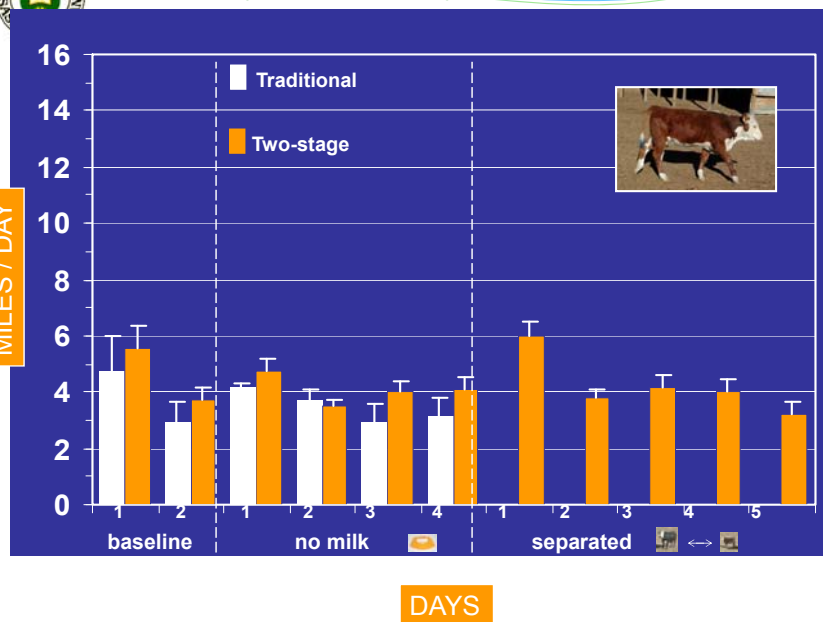


DAYS



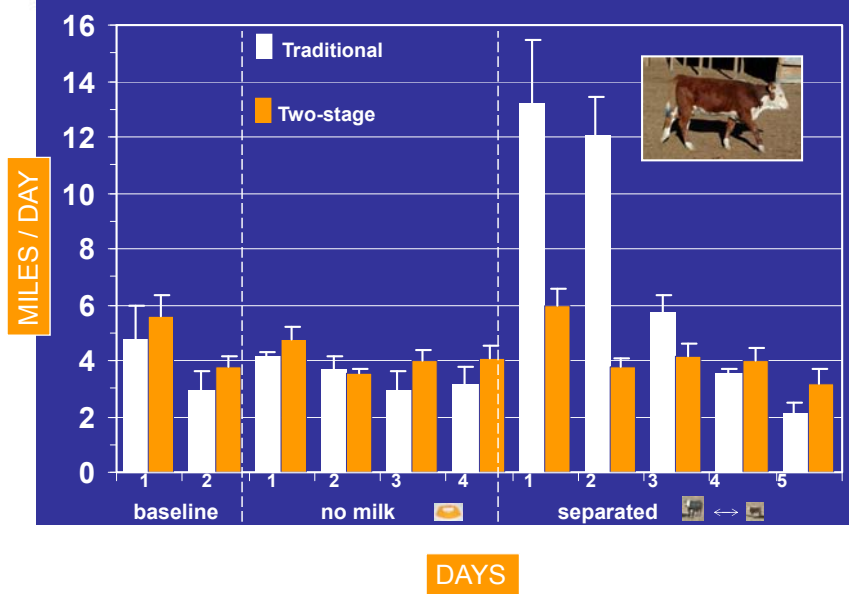
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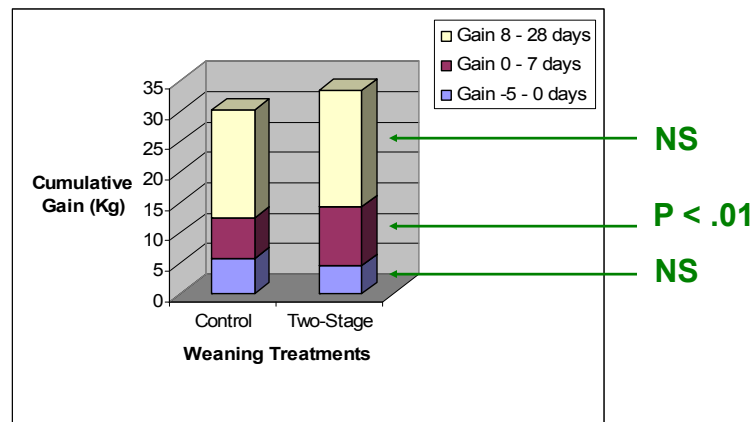




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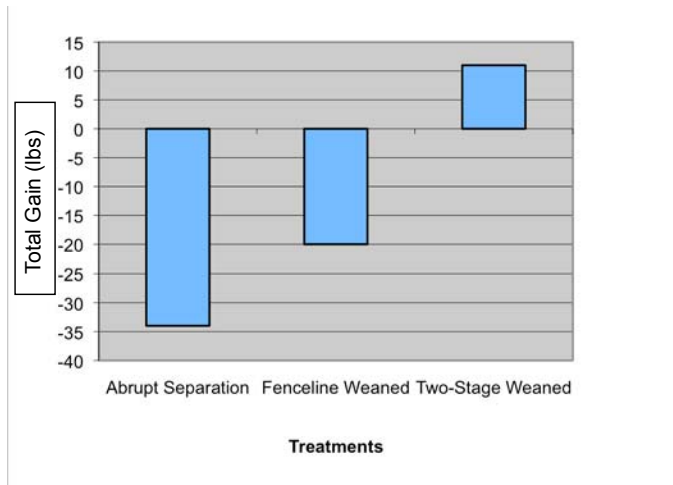


## Performance of calves following Two-Stage Weaning (Haley, 2005)





## Performance of calves 0 – 7 days after weaning (Lane and Bain, 2007)



## Factors that influence adoption of Two-stage weaning

Extra sorting and handling (once to put tags in; once to take tags out)

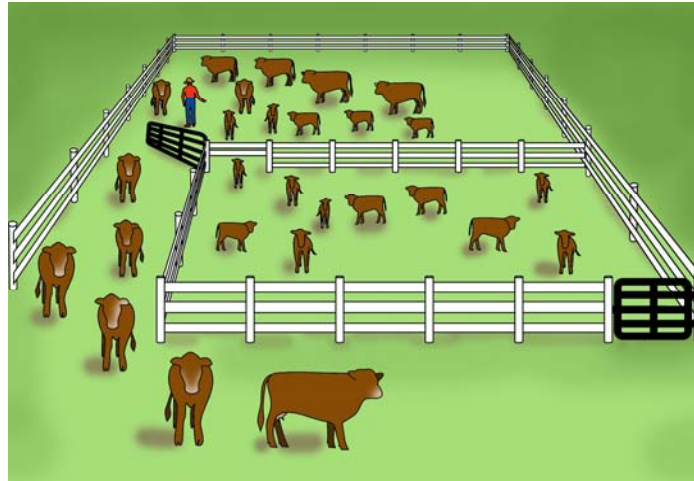
The extra handling equals extra stress to calves. But extra handling does not equal traditional weaning stress!

Size of operation??

Tradition!



## Diagram of layout for sorting cow/calf pairs





## Ranking of Weaning Methods based on performance and signs of distress

Worst – Abrupt separation (Traditional)

Better – Fenceline Weaning on Pasture

Best – Two-stage weaning