

Cattle Growth Dynamics and Its Implications

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Maximize Weight Gain

Minimize Feed/Gain

Reach desirable level of finish

Minimize Discounts

Capture Premiums

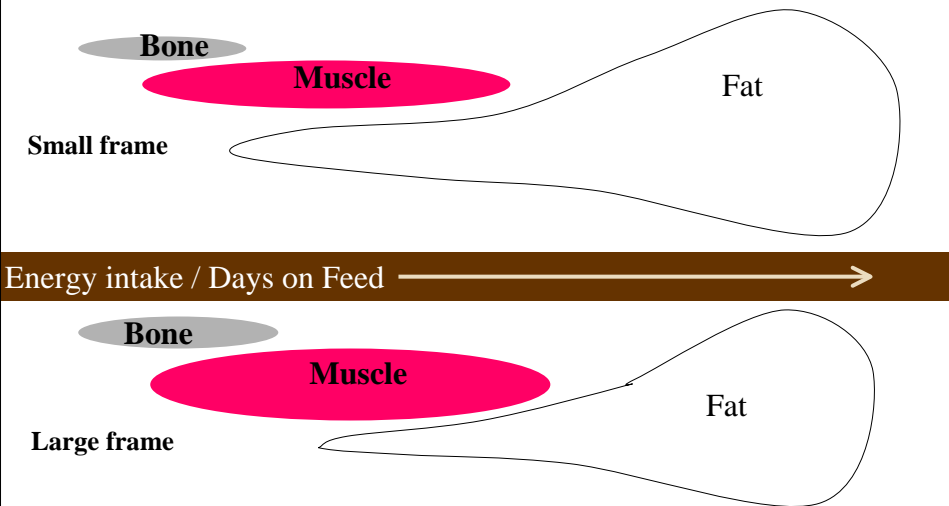
To manage these I must understand growth



- **Body composition = protein + fat in the animal.**
- **Depends upon where the animal falls on its growth curve.**
- **Changing the growth curve: changes the weight at which an animal reaches a specific body composition.**

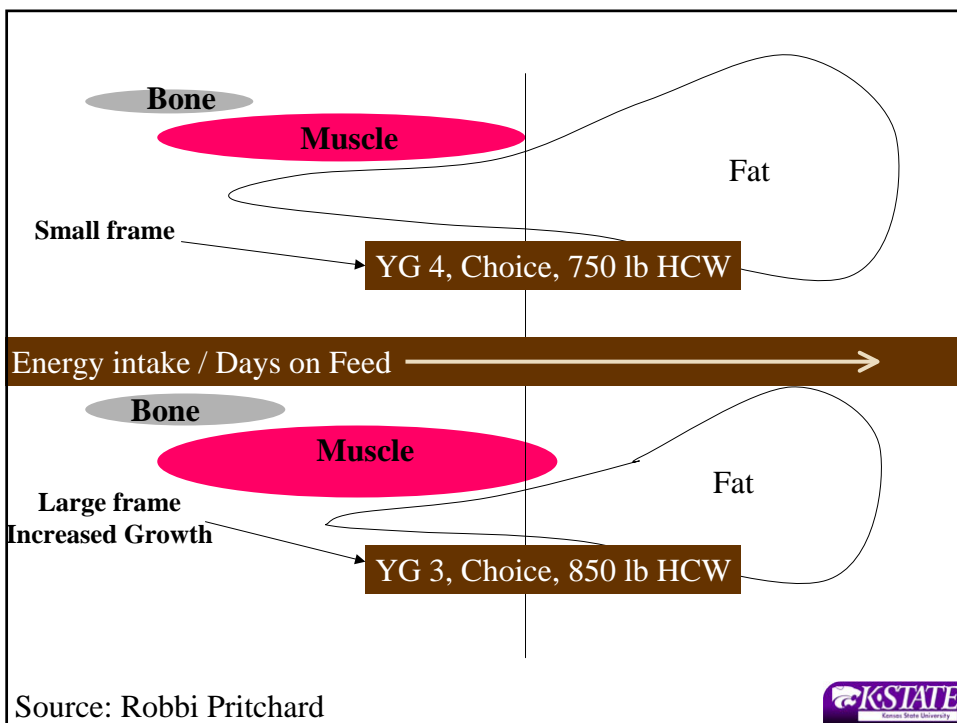
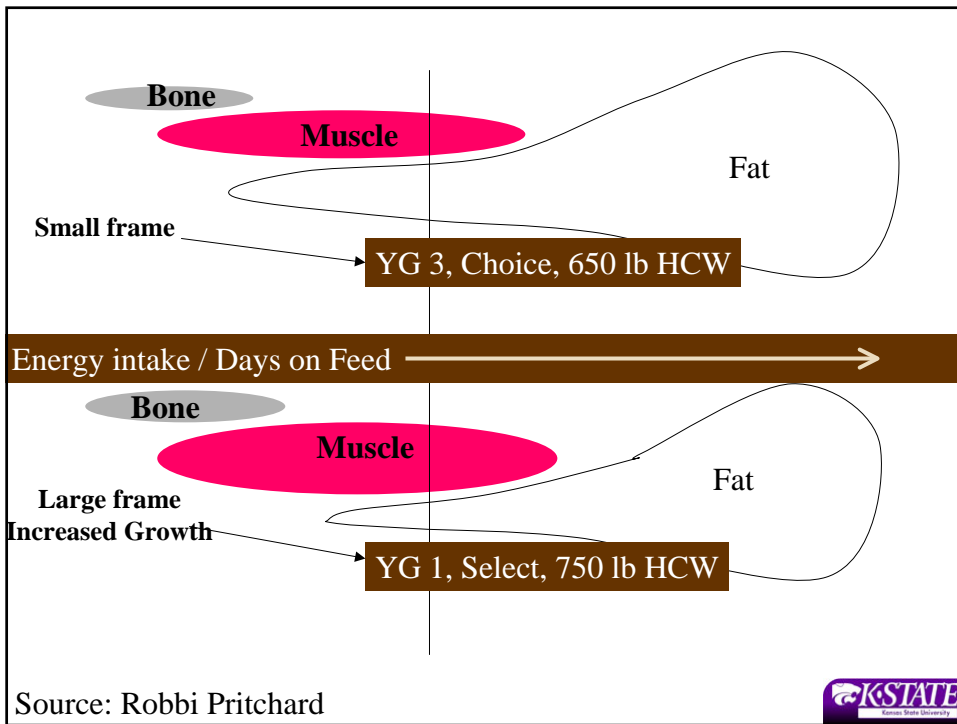


Growth Curve



Source: Robbi Pritchard





Can they have equal fatness? Yes
Will they weigh the same at equal fatness?

No

Will they have similar grade at equal fatness?

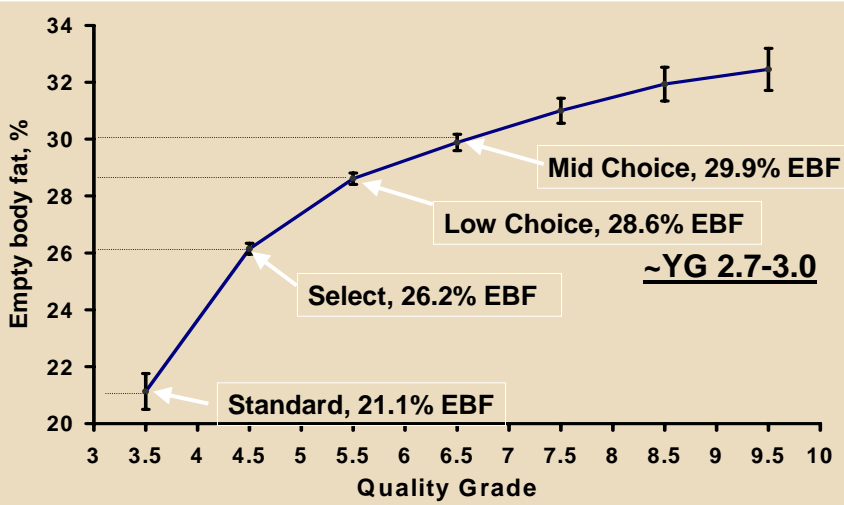
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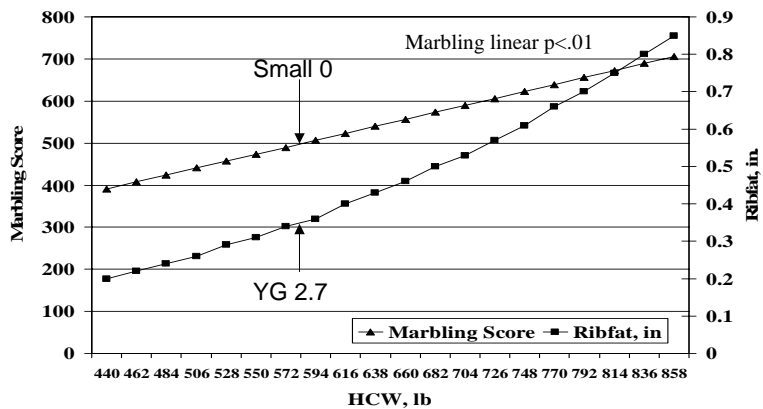
- **Weight at a target fat endpoint**
 - Not a common time endpoint
- **Animals need to reach a certain level of fatness to marble.**



Relationship of body fat to marbling (Guiroy, 2001, total of 1,355 animals)

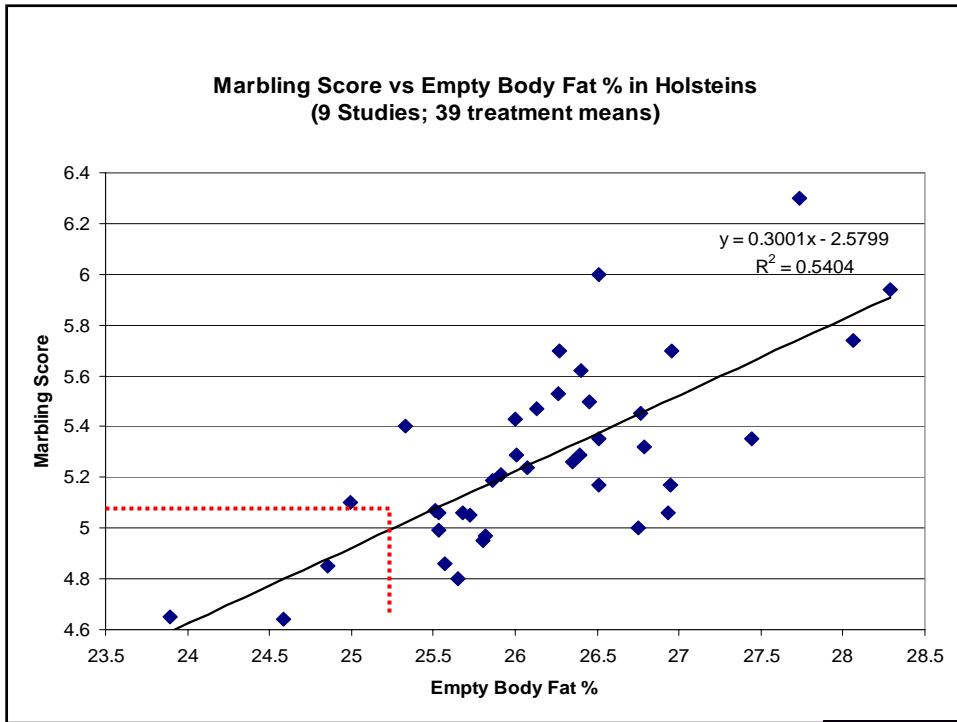


Relationship between Marbling and Backfat with Carcass Weight

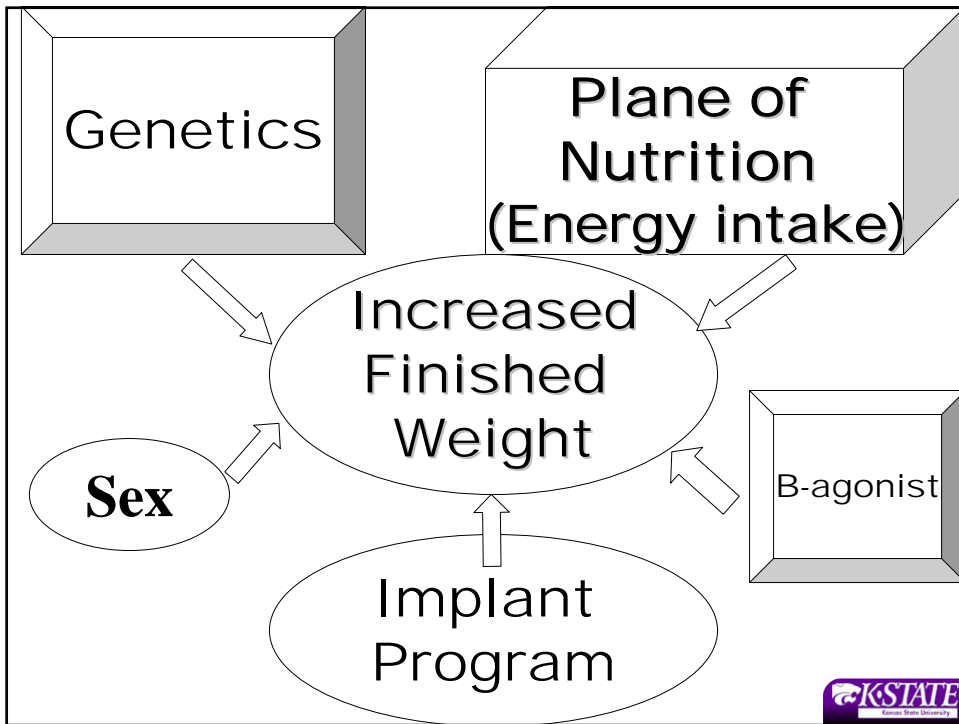


Bruns et al., 2000





- **Allowing cattle to reach a particular fatness will allow the animal to express its genetic potential to marble.**
- **Marbling is linear and increases with increasing hot carcass weight.**
- **Changes in the growth curve will change the weight at which an animal reaches a target level of marbling (fat).**

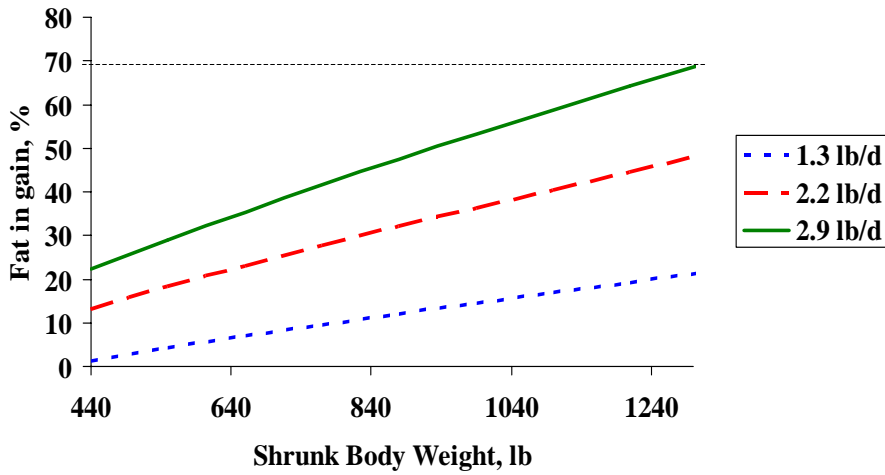


Frame Size x Weight (lb) at equal fatness (29% fat)

	Frame Score			
	5	6	7	8
Steer	1175	1250	1322	1395
Heifer	939	1001	1058	1115

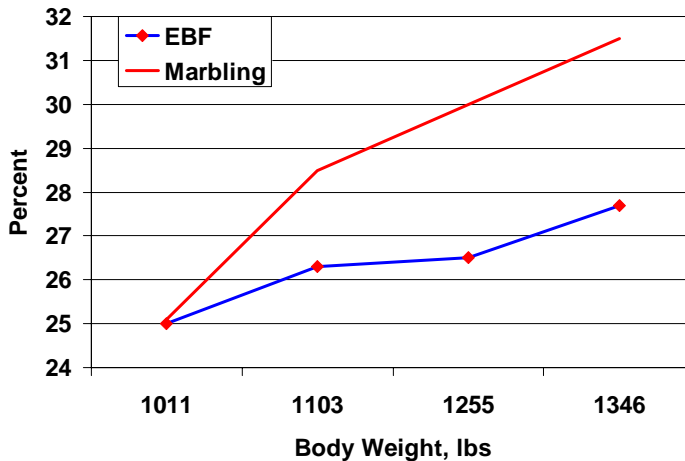


Effect of Rates of gain vs. Fat in gain



Effects of Body Weight on Holsteins

Proceedings: Cornell Holstein Beef Symposium 1986
U. Of MN, 612 lb in wt; Ralgro

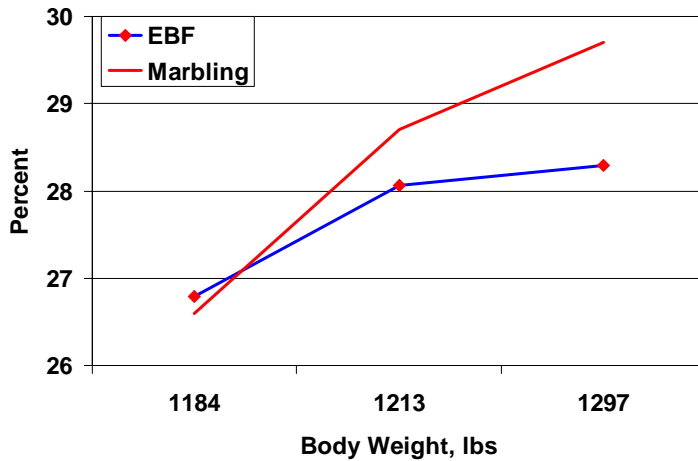


Small0=25.0; Modest0=30.0



Effects of Body Weight on Holsteins

Penn. State, 2001; 404 in wt. 247-332 dof



Small0=25.0; Modest0=30.0



Implants and The Growth Curve

- Do implants change weight at equal fatness?
- Do implants change the amount of fat required to reach Choice?

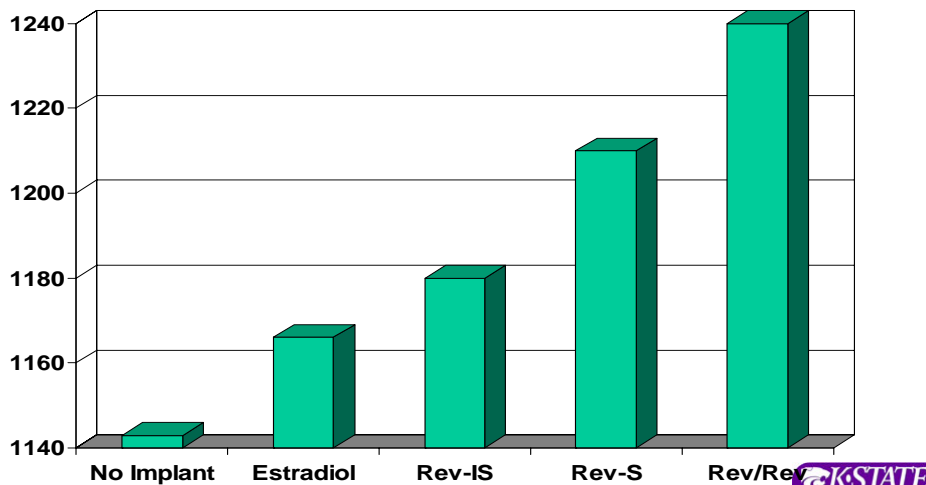


Cornell Database Evaluation

- 13 implant trials,
- 13,640 total animals
 - 9,052 steers; 4,588 heifers
- 15 different implant strategies
- Reimplanting 64-90 days on feed.
- Individual carcass data measurements
 - used to calculate finished weight at 29% empty body fat.



Implant Strategies and Weight at Equal Fatness



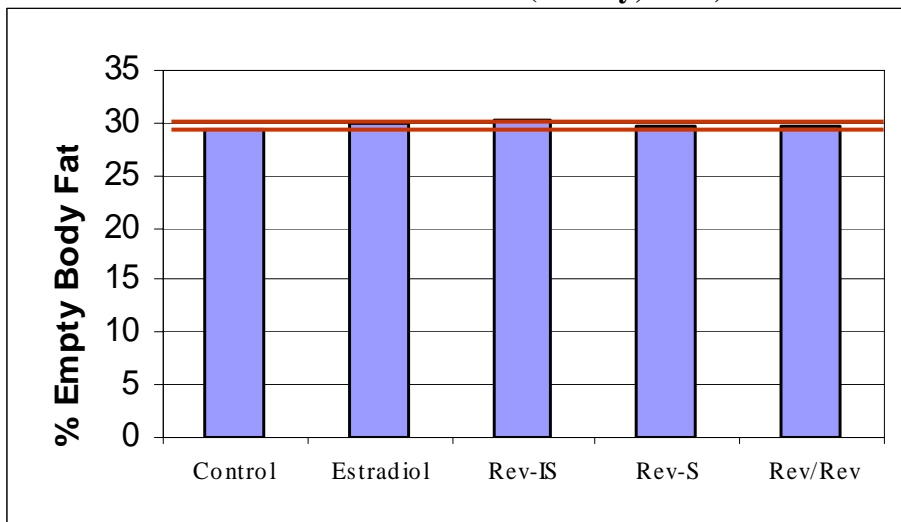
Implants and Fatness

Implants DO change wt at
29% body fat,

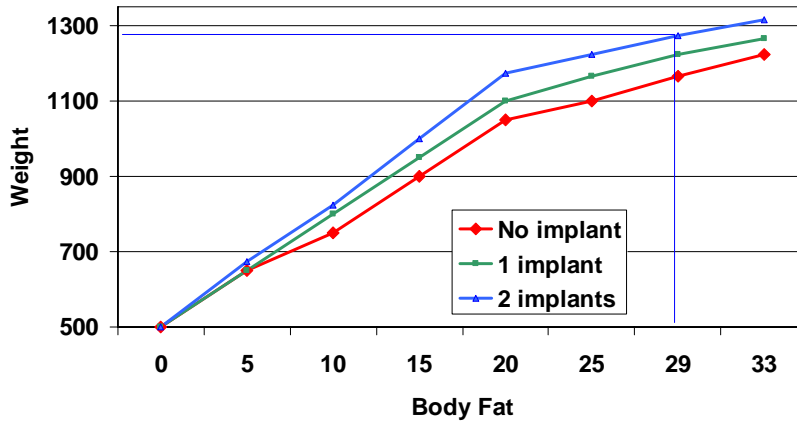
But do implants change
Percent Choice at
29% Body fat?



Fat Content of Steers Grading Low Choice (Guiroy, 2001)

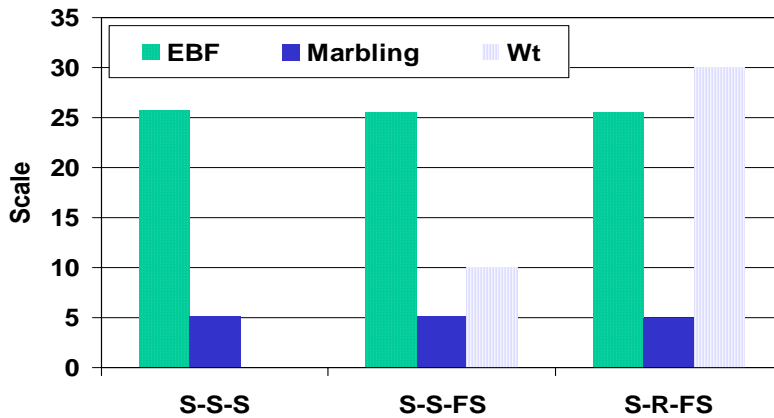


Growth Curve Modification by Implants



Effects of Implants on Holsteins

KSU 1993; 378 in wt. 252 dof

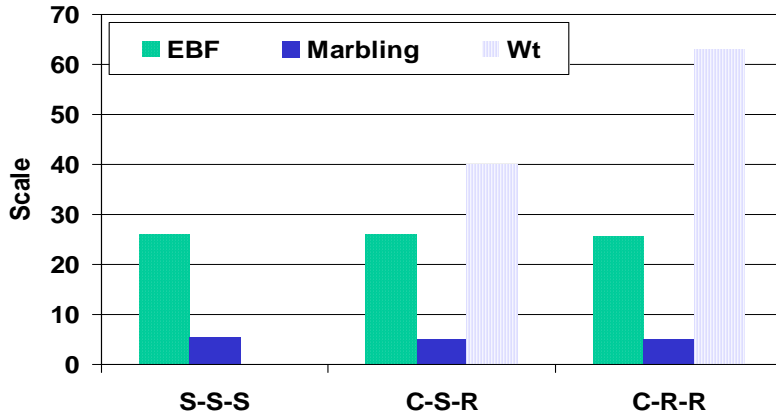


Small0=5.0; Modest0=6.0



Effects of Implants on Holsteins

KSU, 1998; 308 lbs.; 326-350 dof

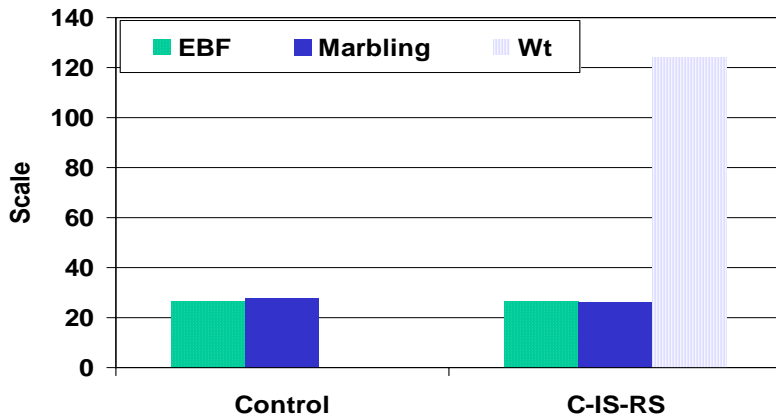


Small0=5.0; Modest0=6.0



Effects of Implants on Holsteins

Cal Poly, 2000; 319 in wt. 291 dof



Small0=25.0; Modest0=30.0



Implants and Finished Weight

- **Implants increase the growth curve**
- **Increasing dose increases weight at a common body fatness.**
- **Different implant programs in time constant trials can be misleading.**
- **Compare cattle of = fatness if evaluating grade differences.**
- **Implants do not change the amount of fat required to reach Choice.**



Questions?



Conclusion

- **Use technology to your advantage.**
- **Animals need to reach a certain fatness to marble.**
- **Relationship between Quality grade vs. Yield grade:**
 - **Exploit it to your advantage.**



Thank You!

