

Including muscularity in Holstein-Friesian dairy breeding goals

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Creating dairy breeding goals to include beef carcass traits

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Background and aim

- High milk production/cow has resulted in lower cow numbers
 - ↓ numbers of calves born
 - Genetic changes mean that dairy bred bull calves are less suited to beef production and have little or no value
- The value of the dairy herd as a provider of beef is becoming an agenda point for many policy important areas (welfare, environmental impact)
- AIM: Develop tools to allow dairy breeding goals to include carcass traits



Materials and methods

- Approximate genetic correlations estimated between Holstein-Friesian carcass traits from ICBF (weight, carcass fat and carcass conformation score) and dairy production and fitness traits
- Phenotypic and genetic parameters between the traits in the UK dairy index (£PLI) were collated
- Impact of changing breeding goal to improve carcass traits was examined

Results

	Carcass wt	C conf score	C fat score
Milk (kg)	0.22	-0.40	-0.34
Milk fat (kg)	0.23	-0.33	-0.33
Milk protein (kg)	0.33	-0.26	-0.23
Calving int (days)		-0.31	-0.25
Non-return rate (0/1)	-0.16		0.23

- Moderate unfavourable genetic correlation between milk & carcass traits
 - Higher milk production = less desirable carcass classification
- Dairy type traits (stature, body depth & angularity) correlated to carcass traits

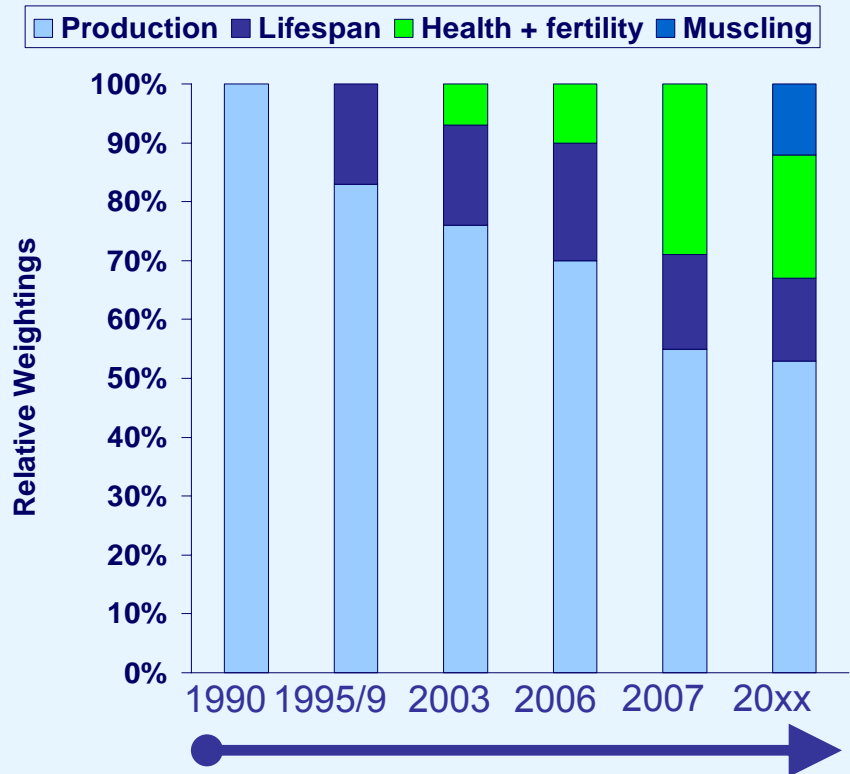
Results

- All indices have a favourable response in carcass weight
 - 0.64 - 0.75 kg/yr
- An index that improves carcass conformation
 - Increases the expected response in fitness traits
 - Decreases the rate of improvement in milk production

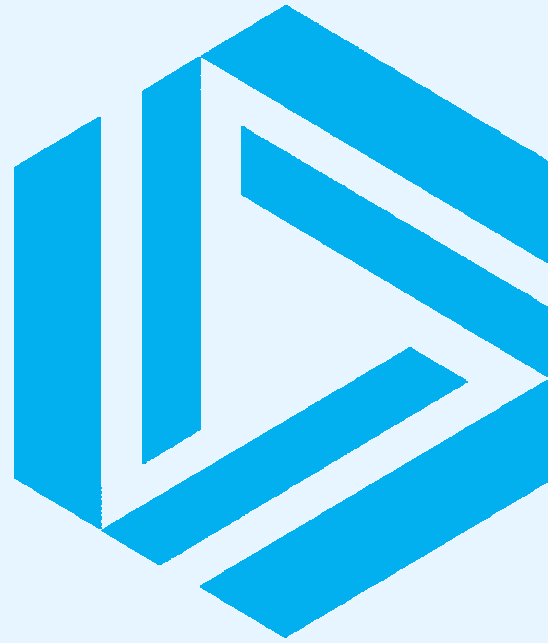
	Milk (kg)	CalvInt (days)	CWt (kg)	CCon (1-15)
£PLI	40.79	0.30	0.64	-0.033
Index with a change in conformation per annum of:				
0	35.11	0.21	0.71	0.00
0.02	30.99	0.16	0.74	0.02
0.04	26.18	0.09	0.75	0.04
0.06	20.71	0.03	0.75	0.06
0.08	14.43	-0.04	0.73	0.08
0.10	7.26	-0.12	0.69	0.10

Conclusion

- Carcass traits can be incorporated into dairy breeding goals
- An economic weight can be calculated for carcass traits
 - If additional value of improved finished animals flow back to the dairy producer, at least in part



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