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Crossbreeding with beef bulls in Swedish dairy herds

- analysis of calving and carcass traits

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Background

- ~60% of Swedish beef from dairy herds.
- Ins. of dairy cows with beef bull semen expected to increase from 10-30%.
- Benefit of carcass traits vs effects on calving performance to be considered.

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SVENSKA KÖTTFÖRETAGEN

Aim

To compare field-recorded calving and carcass traits of crossbreds (dairy dams x beef sires) with purebred Swedish Red and Swedish Holstein dairy cattle.

Calving data

- **Calving difficulty** (easy/difficult) and **stillbirth** (live/dead within 24 hours) recorded for single-born calves 1990-2016.
- All herds with ≥ 5 beef x dairy crosses per 5 yr period.
- In total 1,362,421 calvings in 4,438 herds.
- Dairy and beef bull EBVs for calving traits.

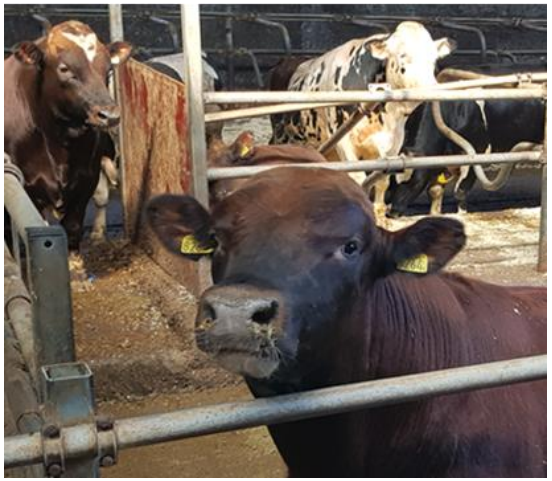
Carcass data

- Records from all herds 2000-2015 with >5 slaughtered animals per 4 yr period, including beef x dairy crosses:
    - Cold carcass **weight** (kg),
    - Lifetime daily carcass **gain** (g/d),
    - EUROP **conformation** and **fat** score (with +/- →15 classes).

- In total 1,159,566 individuals in 11,475 herds:
    - 72,101 **heifers** (avg 27 mo)
    - 263,180 **steers** (avg 26 mo)
    - 824,285 **young bulls** (avg 19 mo)

Methods

- Purebred dairy (SR and SH) compared with crossbreds (Angus, Hereford, Limousin, Simmental, or Charolais sires x SR or SH dams).
- Pairwise differences in least-square means estimated in SAS, HPMIXED.
- Different effects in models such as parity, age, sex, herd, year, season, sire EBV nested within breed…



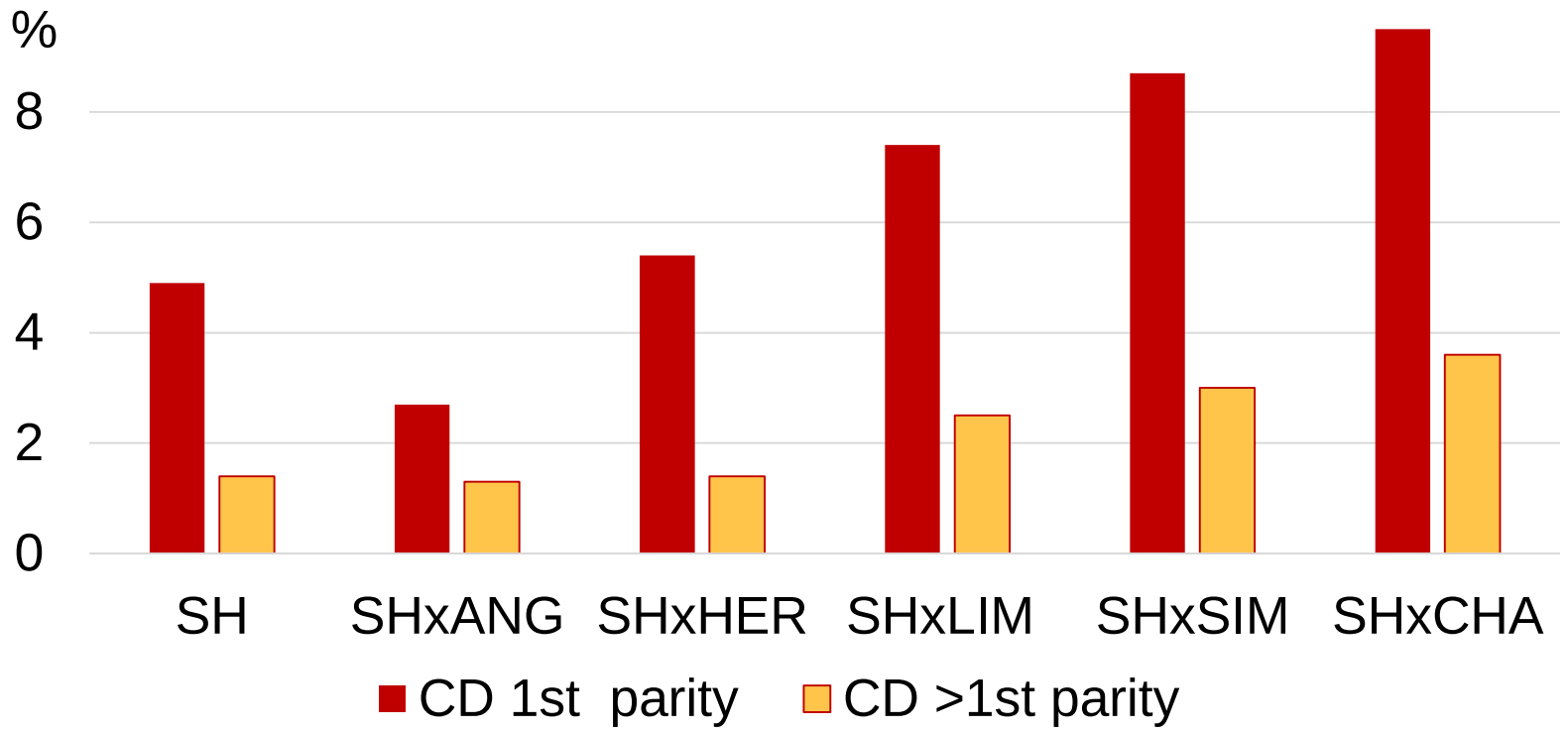
Results – calving traits

Averages (%) for the dairy breeds.

Breed	CD 1st parity	CD >1st parity	SB 1st parity	SB >1st parity
SR	3.2	1.3	2.5	2.9
SH	**4.9**	1.4	**5.2**	3.0

Results – calving difficulty

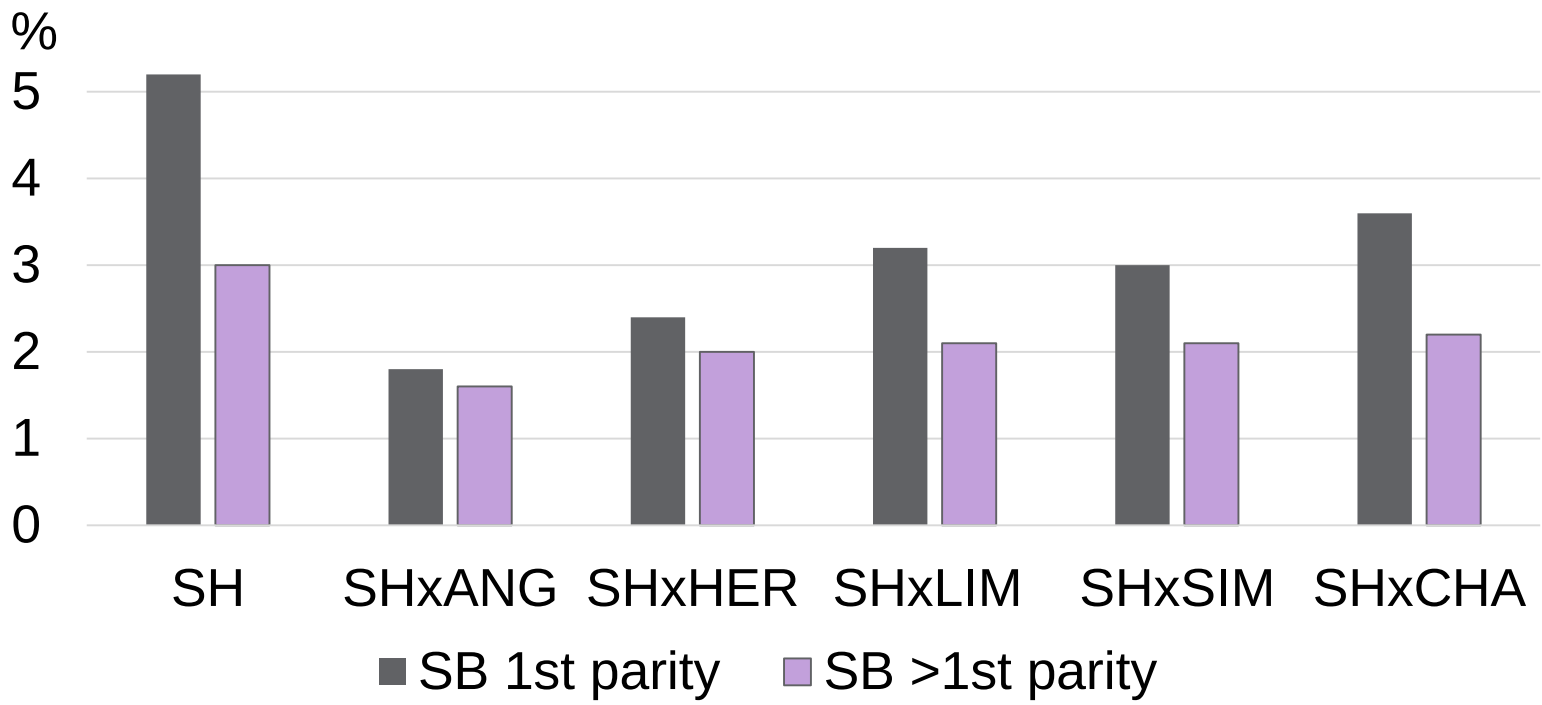
Effect of sire breed in first and later parities.



! The beef bull EBV for calving difficulty matters, especially for first lactation and late maturing beef breeds.

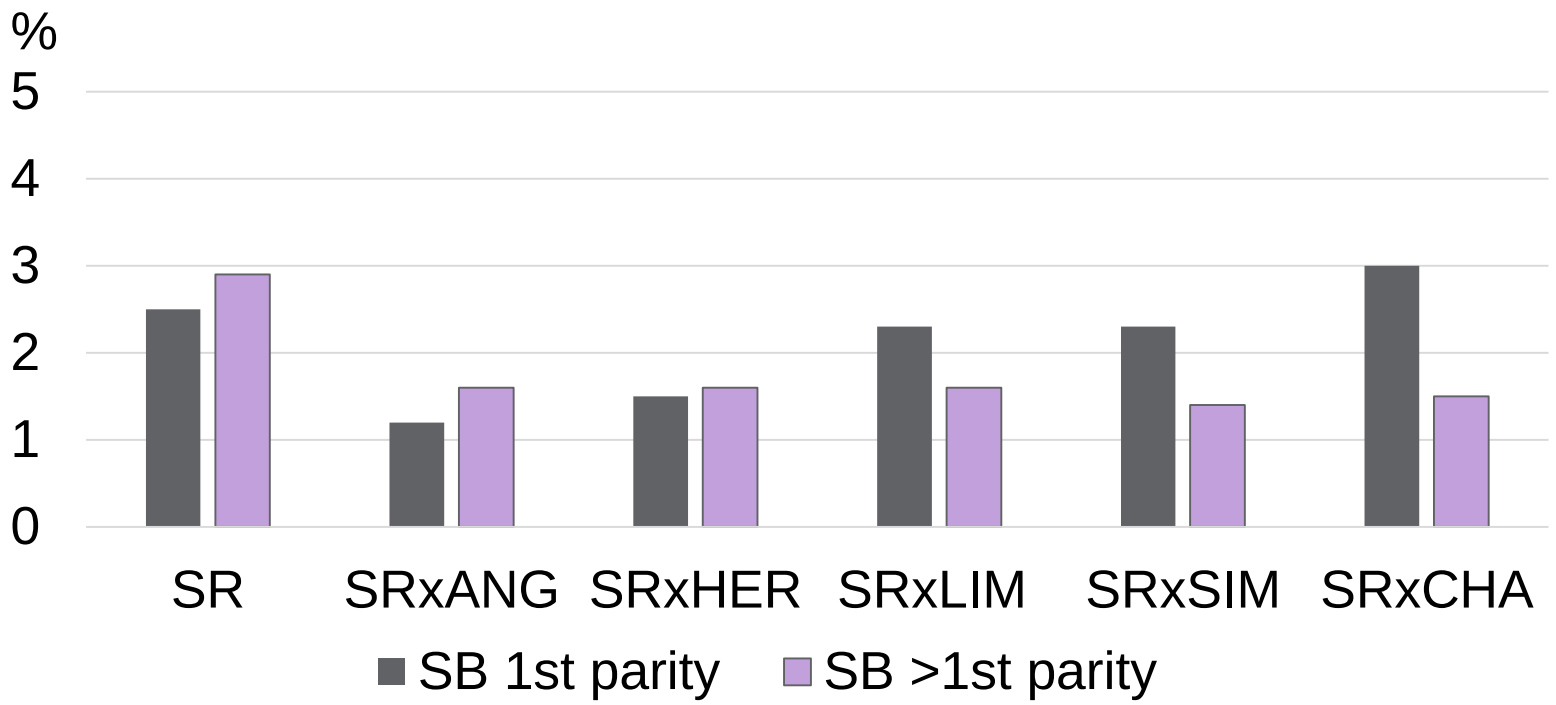
Results – stillbirth

Effect of sire breed in first and later parities.



Results – stillbirth

Effect of sire breed in first and later parities.



Results – carcass traits

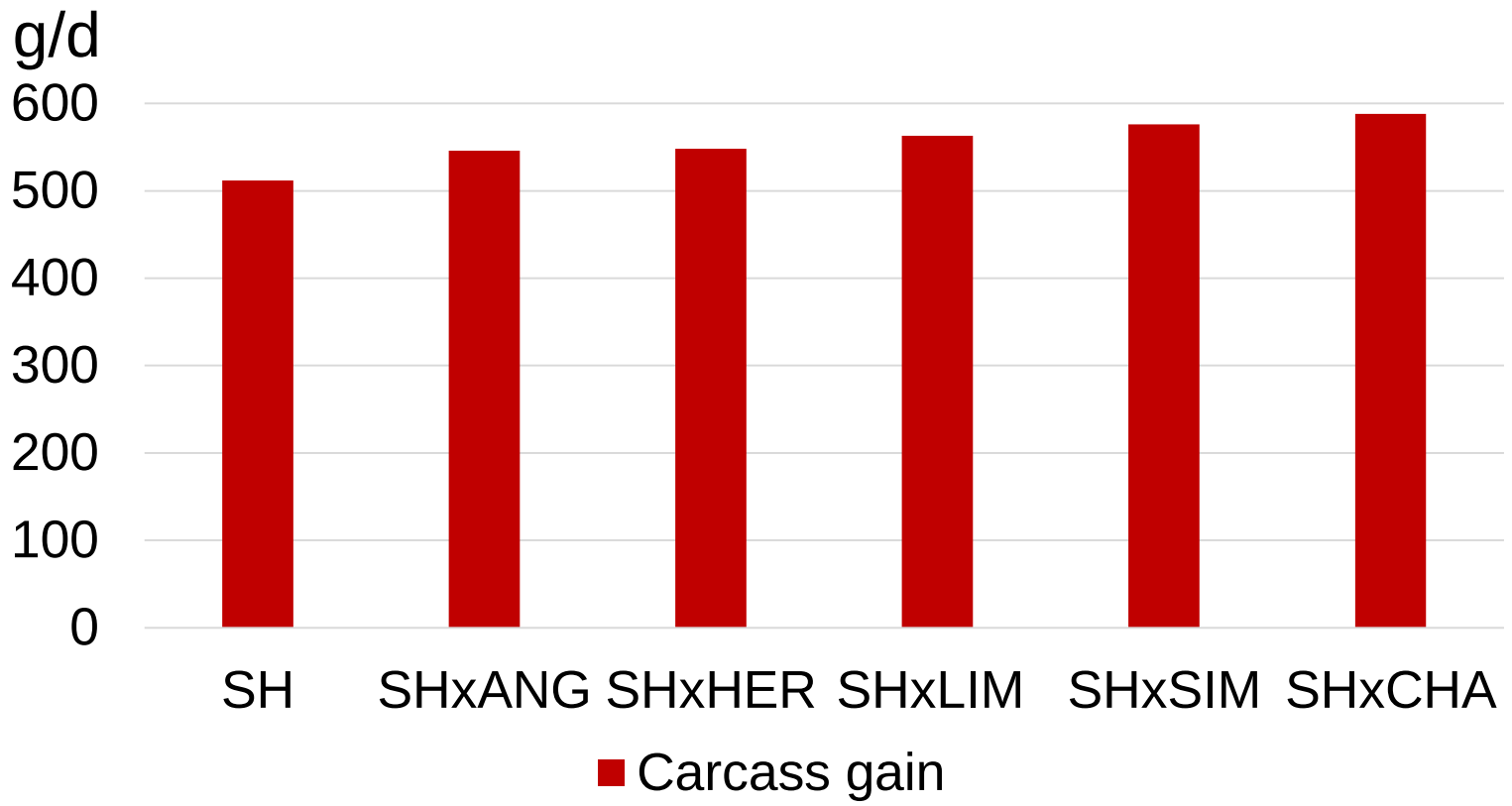
Averages for the dairy breeds.

Breed	Gain (g/d)	Conform. score	Fatness score	Age (d)
Heifers				
SR	306	**4.5**	8.4	845
SH	313	3.8	8.2	850
Young bulls				
SR	508	**5.1**	6.7	588
SH	512	4.2	6.4	586

Steers intermediate for most traits.

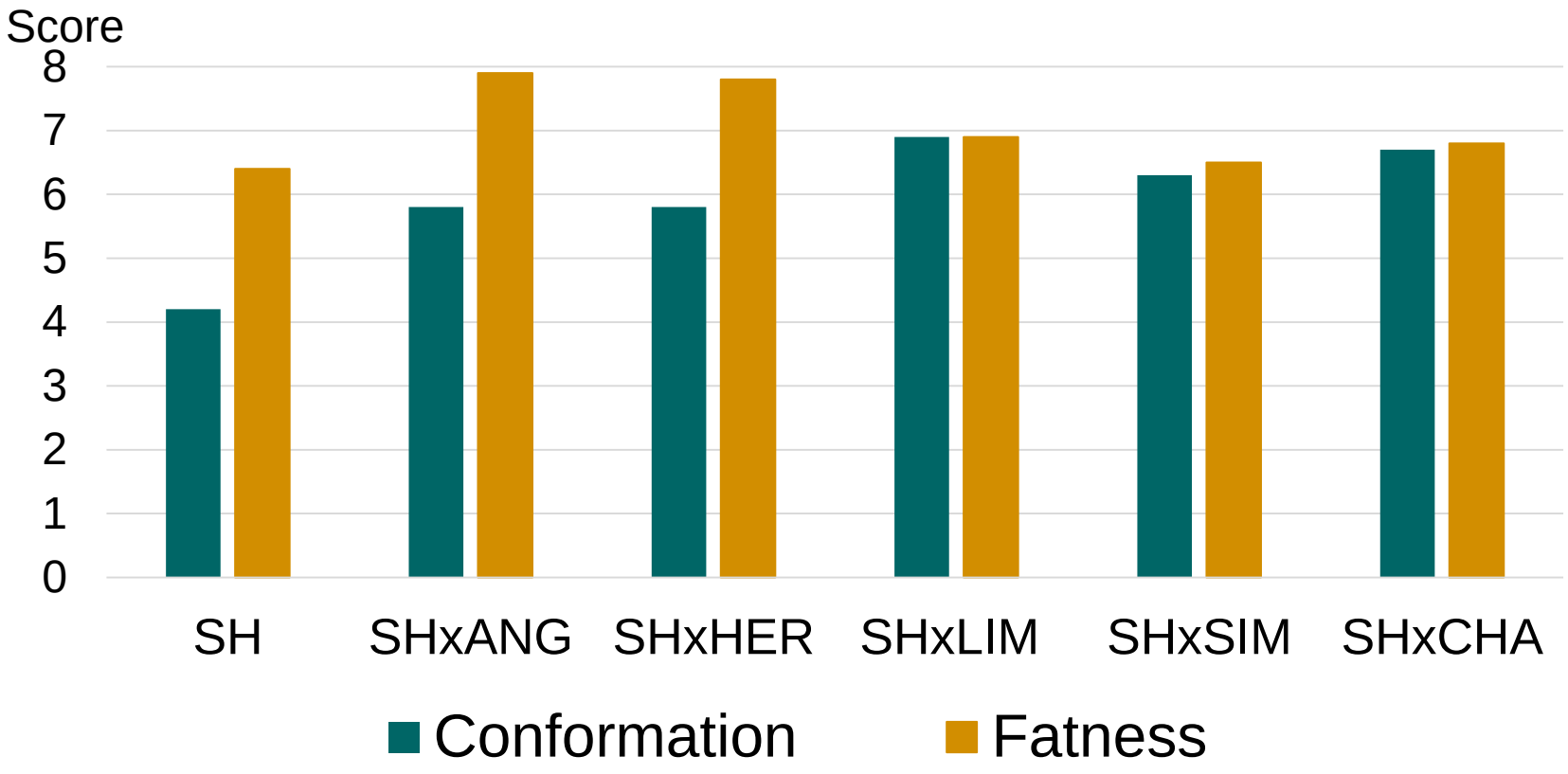
Results –carcass gain

Effect of sire breed: lifetime daily carcass gain of **young bulls**



Results – carcass classification

Effect of sire breed: EUROP classification of **young bulls**



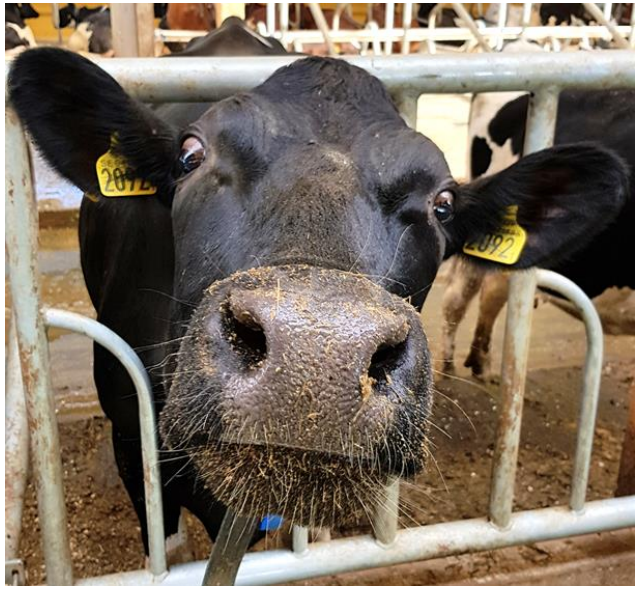
Results – carcass traits

- Advantage of dairy x beef crosses largest for young bulls.

- Early and late maturing beef breed sires suitable to produce dairy x beef crossbreds for different production systems.

In conclusion

- The use of beef sires in crossbreeding with dairy dams can improve beef production.
- Trade-off between carcass and calving traits, especially for primiparous dairy cows.
- Viability better in crossbreds.
- Choice of breed combination *and* individual beef bull of considerable importance for optimizing the outcome.



Photos: Susanne Eriksson