



SusCatt - Increasing productivity, resource efficiency and product quality to increase the economic competitiveness of forage and grazing based cattle production systems

Performance and carcass traits of beef-cross and pure bred dairy steers on forage and semi-natural pastures

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About

We are faced with a dilemma - grazing is necessary to maintain biodiversity in semi-natural pastures, but cattle contribute to climate change.

Could steers born into dairy herds offer grazers a lower climate opportunity, without compromising performance and carcass traits?

We compared the performance of beef-cross and pure-bred dairy steers in two forage and pasture-based production systems.

Objective

The effect of using beef semen on dairy cows has the greatest impact in intensive rearing systems where the growth potential of crossbred cattle can be efficiently utilized. This study investigated if these crossbred steers also performed better than pure-bred dairy calves in extensive systems based on forages and grazing semi-natural pastures.

What did we do?

In the experiment, the performance of 32 pure-bred Swedish Red or Swedish Holstein dairy steer calves were compared with 32 Charolais cross steers from Swedish Red or Holstein cows - all at two feeding levels. Sixteen calves from each group were fed at a moderately high intensity and these were compared with 16 from each group fed a lower intensity diet.

The high feed groups of spring-born calves started inside on early harvested grass/clover silage supplemented with barley, peas and rapeseed meal, initially composing 42 % of diet. Concentrate decreased along with increased



The steers were raised at SLU Götala Beef and Lamb Research Centre. Photo: Anna Hessle.

animal weight to 0 % at turn-out to semi-natural pastures. Steers finally were finished inside on early harvested silage, for slaughter at 21 months of age.

The low intensity autumn-born calves had a shorter initial housing period followed by grazing semi-natural pastures after turnout. During winter housing, they ate late cut silage before spending a second summer on semi-natural pasture. They were housed for final finishing on early cut silage and slaughtered at 28 months of age.

They were followed throughout life, to slaughter and cutting, weighing sections from one hindquarter of each animal.

Compare right weight gain

Growth rates for the cross bred and pure bred calves throughout life were similar at 0.85 kg per day. However, after slaughter we could confirm the superiority of the crossbreds with greater carcass weights. For steers slaughtered at 21 months of age, their carcasses were on average 32 kg higher compared to pure-bred dairy steers. For steers slaughtered at 28

months of age, the breed difference was even greater at 50 kg. So, one should not be fooled by just looking at the liveweight, as it is the composition of the weight gain that matters and effects the carcass weight.

More muscles in crossbreds

There were also differences in their deposition of muscles and fat, with a greater proportion of muscles found in the beef crosses than dairy bred steers. Again, difference in conformation score between the breed groups in our study were greater for steers slaughtered at 28 months of age than for those slaughtered at 21 months. Furthermore, the higher conformation score of the crossbreds was reflected in a larger proportion of valuable retail cuts and a smaller proportion of bone in the carcasses. The dairy steers deposited more fat, reflecting a tendency to a higher degree of visually assessed intramuscular marbling, in the sirloin steak. However, these differences in fat class or fat trim between the breeds proved not to be statistically significant.

More fatness with longer finishing

The steers slaughtered at 21 months of age had a higher fat class than cattle slaughtered at 28 months. This is possibly a reflection on the longer housing period of the 21-month-steers leading up to slaughter (163 vs 100 days) since growth rates were greater on silage compared with grazing. Normally, the proportion of carcass fat is higher from bigger cattle, but here we found fatter carcasses from animals with lower carcass weight maybe because a higher weight gain during finishing phase.



Cross bred steers had heavier carcasses with more muscles than pure dairy steers. Photo: Frida Dahlström.

Conclusion

Using beef breed semen for dairy cows gives calves with the potential for higher carcass gain and more meat compared with pure-bred dairy cattle – even under semi-intensive and extensive forage based systems.



Half of the steers were grazing two summers on semi-natural pastures before slaughter at 28 months of age. Photo: Vanja Sandgren.



Foreman Jonas Dahl took care of the steers whereas associated professor Anna Hessele was responsible for the research. Photo: Vanja Sandgren.

Imprint

Citing: Hessele, A., Therkildsen, M., Segerkvist, K. (2019). Beef production systems with steers of dairy and dairy x beef breed based on forage and semi-natural pastures. *Animals* 9, 1064. Download at <https://www.mdpi.com/2076-2615/9/12/1064>. SusCatt Technical note 2.1.1 Download at <https://bit.ly/2GT1OHF>

SusCatt was possible by funding from SusAn, an ERA-Net, co-funded under European Union's Horizon 2020 research and innovation programme (www.era-susan.eu), Grant n°696231. Other financers were Västra Götalandsregionen Grants n°RUN-610-0789-13; RUN-612-1042-15, Interreg ÖKS Grant n°20200994, Agroväst, Nötkreatursstiftelsen Skaraborg and Swedish Research Council Formas.

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Review: Gillian Butler

Editor: Håvard Steinshamn

Publishers: Consortium of the SusCatt project, c/Norwegian Institute of Bioeconomy Research, Norway

