

Can Fleckvieh genes improve performance in a dairy herd?

A study at Elsenburg, conducted by researchers from the Institute for Animal Production at the Western Cape Department of Agriculture, investigates the use of Fleckvieh genetics on Holstein and Jersey cows in a cross-breeding project. This may have long-term economic benefits for dairy farmers, writes **Dr Carel Muller** of Elsenburg's Institute for Dairy Production.

Genetic analyses, recently published in international scientific journals, show a moderate negative correlation between high milk yield and fertility in dairy cows.

Not only does poor reproduction in a dairy cow reduce her productive life and lifetime performance, it affects the entire herd's potential for

genetic improvement. Poor reproduction in a dairy herd can also have non-genetic causes. As herds become larger, individual cows receive less attention. This makes high-producing cows very vulnerable to culling.

Dairy workers are becoming less familiar with dairy cows' normal reproductive processes, and mastitis is increasingly a problem because of the way cows are kept inside intensive housing systems.

Dairy farmers are looking for ways to improve cows' robustness for a longer productive life. One proposed method is cross-breeding with an appropriate breed.

HOW ABOUT CROSS-BREEDING?

In South Africa, little attention has been paid to cross-breeding in dairy cattle, and no scientific

cross-breeding studies have been conducted. Breed societies don't support this breeding option, as it may mean a loss of registered animals from the breed and a loss of income for the society.

Simmentaler-derived breed. In 2006, the Western Cape Department of Agriculture launched a study on the profitability of cross-breeding Jersey and Holstein cows with Fleckvieh sires.

'FLECKVIEH CROSS-BRED COWS SEEM TO HAVE A BETTER REPRODUCTIVE PERFORMANCE THAN THEIR HOLSTEIN AND JERSEY CONTEMPORARIES.'



COURTESY OF ELSENBURG

DR CAREL MULLER

BELOW: In a study at Elsenburg, Fleckvieh sires are used on Holstein and Jersey cows. The performance of the cross-bred cows (Fleckvieh x Holstein and Fleckvieh x Jersey) is compared with that of pure-bred Holstein and Jersey cows.

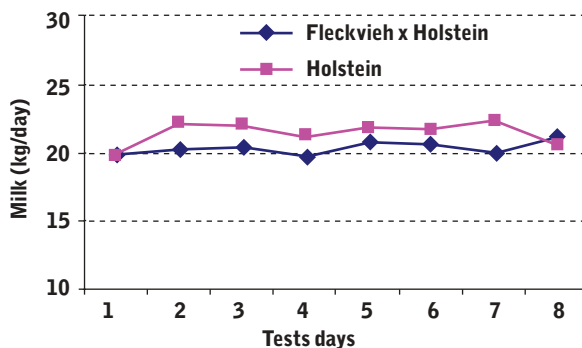
In any case, South Africa's Milk Recording Scheme makes little provision for the correct identification of cross-bred animals. On the other hand, many dairy farmers have been cross-breeding, although mostly in an unstructured way and with many breeds.

The results are at most speculative, mainly because cross-bred animals are few. But several dairy farmers have, on a small scale, been experimenting with cross-breeding Jerseys with Fleckviehs, a milk-producing, dual-purpose,

The study is being conducted at the Elsenburg Research Farm. Its main aim is to compare the performance of cross-bred animals (Fleckvieh x Holstein and Fleckvieh x Jersey cows) to that of pure-bred Holstein and Jersey cows.

FLECKVIEH CROSS RESULTS

The study compares the milk yield of Holstein and Fleckvieh x Holstein cows. The data recorded so far indicates that the first lactation milk yield





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is very similar, at 6 519kg for Holsteins and 6 109kg for Fleckvieh x Holsteins.

But though the cross-bred cows' yield was lower, their milk had a higher fat and protein content. Thus the overall fat and protein production of the pure-bred and the cross-bred cows was similar.

Using the standard milk-pricing formula, the milk price for Fleckvieh x Holstein cows would be higher than for Holsteins.

As shown in **Figure 1**, the lactation curves for the two breeds are also very similar.

Calving ease was also recorded. The average birth weight of Holstein and Fleckvieh x Holstein calves was 38,5kg and 39,2kg respectively. The average ease of calving was 1,3 for Holstein and

1,0 for cross-bred cows, where 1,0 indicates no problem at calving.

When comparing Fleckvieh x Jersey calves to pure Jersey calves, the cross-bred calves had a higher average birth weight of 31,9kg compared to 25,1kg for Jersey calves. The average calving ease of each was also similar, at 1,2 for cross-bred calves and 1,0 for Jerseys. The number of difficult calvings (with a calving ease above 3) was six out of 112 Fleckvieh x Jersey calves and one out of 123 Jersey calves.

BETTER REPRODUCTIVE PERFORMANCE

The reproductive performance of Fleckvieh-cross cows seems to be better than that of pure-bred Holstein and Jersey contemporaries.

Compared to pure Holsteins, Fleckvieh x Holstein cows required fewer inseminations per conception (1,93 vs 2,79) and had shorter intervals from calving to first insemination (89 days vs 97 days) and from calving to conception (132 days vs 172 days).

Similar trends were observed for Fleckvieh x Jersey crosses compared to pure Jersey cows. Here, the crossbred cows required 2,5 inseminations per conception vs 2,9, needed 72 days from calving

ABOVE: Genetic analyses have shown a moderate negative correlation between high milk yield and fertility in Holstein cows.

RIGHT: Little research has been done on cross-breeding in the South African dairy industry so far. The Western Cape Department of Agriculture at Elsenburg has embarked on an in-depth study of the profitability of cross-breeding Jersey and Holstein dairy cows with Fleckvieh (Simmentaler).
PHOTOS: COURTESY OF THE SIMMENTALER/SIMBRA BREEDERS SOCIETY



to first insemination vs 91 days, and took 131 days from calving to conception vs 168 days.

THE NEXT STEP

These results are positive, but preliminary, as a larger data set is needed to confirm the differences. One of the requirements is a larger sample size, so cross-breeding Holstein and Jersey cows with Fleckvieh is continuing. F1 cross-bred cows are also being inseminated with Fleckvieh semen to upgrade part of the herd to Fleckvieh.

A paper presented at the 2010 Conference of the South African Society for Agricultural Extension demonstrated the benefits of using cross-bred dairy animals in reducing the impact of livestock on global warming.

Any large-scale reduction in dairy cow numbers would compromise food security, making it impractical, so there's a need for more productive

dairy cows. Dual purpose animals would be one way to overcome the environmental effect of dairy and beef cattle.

Another Elsenburg project is investigating the milk fatty acid composition – specifically the conjugated linoleic acid (CLA) content – of the milk of Fleckvieh x Holstein and Fleckvieh x Jersey cows.

Milk samples from cross-bred and pure-bred cows on similar diets are being collected at different times in the lactation cycle and analysed. Because CLA has anti-carcinogenic and anti-diabetic benefits for humans, the study will be conducted in co-operation with the Medical Research Council.

If milk from Fleckvieh and Fleckvieh-cross cows shows higher CLA levels, this could be a basis for a brand name, benefitting producers as well as consumers.

• Contact the Simmentaler/Simbra Breeders Society on 051 446 0580/2.