Breeding heat-tolerant dairy cows: production vs. fertility

From paper

SHORT SUMMARY FOR PRACTITIONERS:

As temperatures rise due to climate change, selecting dairy cows that can cope with heat is becoming increasingly important — even in traditionally cooler regions. This study examined over 100,000 Holstein cows in Spain to better understand how heat stress affects both milk production and fertility, and how these two traits are genetically linked under hot conditions.

A key concern in breeding for heat tolerance has been whether selecting cows that maintain milk output during heat stress might have an effect on fertility, or vice versa. The positive outcome from this study is that the trade-off between production and fertility weakens as temperatures rise. This means that cows that produce well under heat stress are not genetically more likely to have fertility issues, and cows with naturally strong fertility tend to show smaller drops in milk production during hot weather.

The practical recommendation for farmers and breeding programmes is twofold. First, milk and protein yield data — which are already routinely collected and have higher heritability — should remain useful indicators for selecting heat-tolerant animals, as they are the main economic driver on farm. However, incorporating fertility responses to heat stress into selection programmes is also valuable, since good fertility under heat stress is likely a sign of genuine physiological adaptation to high temperatures, rather than simply an animal pushing through at the expense of its body reserves and long-term health.

Overall, breeding strategies that combine both production and fertility responses to heat will help identify cows that are well-adapted to hot conditions — maintaining both productivity and reproductive performance as climates warm.

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