

Valuing resilience, at the animal level

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In agricultural systems, expected changes in production circumstances, such as those driven by climate change, will make some perturbations more difficult to manage at the farm level. In the context of dairy production, where deviations in performance relative to climate and weather variables are well-known, it will become increasingly important that individual animals are able to maintain efficient levels of production in the face of these environmental challenges.

This resilience can be introduced at the animal level through genetic selection, where the underlying biological mechanisms (traits) of resilience are accounted for in breeding decisions. However, in order to properly account for traits in the breeding objective, we need to have a good understanding of the value of their improvement. For more conventional traits (such as Yield), this is usually calculated in terms of the economic benefit of the improvement, linked to current production circumstances (such as milk price), but this approach is problematic for traits associated with resilience, where their value is longer-term and also dependent on uncertain climate projections.

To get around this problem, we used a novel application of a discrete choice experiment to investigate how the value of dairy trait improvements change, if the production objective is either efficiency or resilience.