



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

Which cows suit UK low-input or organic dairying?

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Challenge

For years, breeding in mainstream dairying focused on increasing milk yield, but these high-performance cows do not suit low-input production. UK interest in grazing based dairying has risen over the last 20 years, yet there is little guidance on breeding priorities, with individual farms customizing crossbreeding to suit their system. Here we describe lessons learned from 17 such farms.

Objective

In the absence of a coordinated approach to dairy breeding for low-input systems, each farm has largely been left to their own devices. Ideally, they want cows to maintain a reasonable yield of quality milk but they must get cows back in-calf, avoid mastitis and other ailments. Most farms use a combination of breeds and crosses, so inevitably it takes several generations to reach a conclusion (if it ever does?). This has been repeated up and down the country so, here we aim to coordinate information from innovative farms, looking for common themes which might short cut the process for future practitioners. Another interest was to investigate the scope to enhance milk fat composition – aiming to breed cows that produce milk with more good omega-3 fats, which we lack in our diet.

What did we do and what did we find?

Seventeen herds were involved (7 organic and 10 low-input-conventional); all a mix of both purebred and crossbred cows, with the pedigree of each cow described by the farmers. Production, fertility and health records from



Typical crossbred cows. Photo by Acorn Dairy, Darlington, UK.

just over 1000 cows were collected 4 times over a year. We also took individual milk samples each time, assessing fatty acid profiles, as well as basic composition including fat, protein and somatic cell counts.

In total we collected information on 40 different breeds and crosses; some in small numbers and maybe only on single farms. However, to generate guidance relevant for a range of systems, we restricted the comparison to records with at least six cows of the same breed (or combination), on at least three different farms – bringing the number of breeds down to 8 (listed in the table).

All individual assessments were then combined to give 2 overarching scores, for every cow recorded under these 8 breeds. These scores had different weightings to allow breed ranking under 2 differing priorities:

1. Health score: 30% production, **50% health** and 20% fatty acids.
2. Production score: **60% production**, 30% health and 10% fatty acids

Results 1

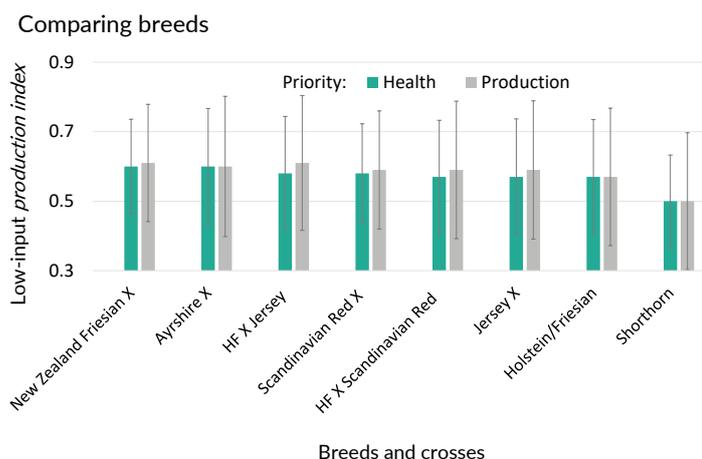
We set off to rank the suitability of the breeds and crosses for low input dairying. However, we found the greatest impact on the records collected was not 'which cow' but 'which farm' - how they were managed, a good system is good, irrespective of breed.

Maybe we should not be surprised that no single breed or combination was outstanding in every characteristic – all appeared to have strengths and weaknesses (relative to other breeds in the study):

Breed or cross	No.	Strength	Weakness
Ayrshire X	100	Fat composition	Antibiotic treatments
Holstein/ Friesian	325	Milk yield	Fat composition and antibiotic treatment
Jersey X HF	184	Milk and solids yield	Fat composition and antibiotic treatment
Scandinavian Red X HF	274	Milk and solids yield	Fat composition
Jersey cross	121	Antibiotic treatment and fat composition	Milk yield
NZ FriesianX	90	Udder health and antibiotic treatment	Mid-range for milk yield
Dairy Shorthorn	80	Antibiotic treatment, mid-range for fat quality	Milk and solids yield
Scandinavian Red X	140	Udder health	Mid-range for solids yield

Results 2

Surprise, surprise – strengths and weaknesses balance out, so combining records to give the overall scores actually shows very little between the breeds and considerable variation within them – a consequence of the different farming system involved.



Based on these records, the chart [bottom left] shows crosses with New Zealand Friesian genetics fair best under systems with either production and health priorities. As for the other breeds, farms where animal health is important might also consider Ayrshire crosses although they have a lower production potential. Shorthorn or Jersey crosses would not be a good idea if herd health is critical. On the other hand, if the farm system prioritises milk and solids yield, any crosses with Holstein/Friesian ought to fair OK although Jersey crosses might be more vulnerable to health challenges, compared with the Scandinavian crosses.

Conclusion

Records collected from 17 low-input and organic dairy farms show breeding strategy is less critical than other aspects of management. All breeds and crosses monitored show a wide range in performance, with differing strengths and weaknesses. Cows involving New Zealand Friesian genetics fair best overall with respect to production, animal health and fat composition whereas Shorthorns were at the other end of the scale.

Farmers need cows to suit their system although breed choice is only one decision leading to a sustainable enterprise.

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