

Next Generation Jersey

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Summary

- The introduction of Jersey cows into Teagasc's *Next Generation Herd* provides a comparison between high EBI Holstein-Friesian and Jersey genetics to determine the potential impact of crossbreeding with Jersey in the context of the genetic improvement being achieved within our Holstein-Friesian-based national breeding programme.
- Results to date highlight the contrasting yet complimentary attributes of high EBI Holstein-Friesian and high EBI Jersey, as well as the potential for higher efficiency and productivity per ha with Jersey.
- In light of concerns surrounding low value male calves, Jersey genetics should be exploited responsibly. Use sexed semen if feasible, and maximise use of high Dairy Beef index beef sires.

Introduction

The Jersey breed has many favourable characteristics for crossbreeding in Ireland: small size, moderate yield coupled with high milk fat and protein content, high intake capacity, superior feed efficiency and compatibility with a pasture based system. These characteristics complement the higher yielding Holstein-Friesian, and the genetic distance between the breeds results in greater expression of hybrid vigour compared to crosses of more closely related breeds. Previous research conducted at Teagasc Moorepark has consistently demonstrated that Jersey×Holstein-Friesian crossbred cows outperform their Holstein-Friesian contemporaries due to a combination of improved fertility and herd productivity. The economic advantage varied between studies, but was generally approximately €150 per cow per lactation.

Next Generation Jersey

In 2018, high EBI Jersey cows were introduced into the *Next Generation Herd* at the Dairygold Research Farm in Kilworth. Comparative EBI, sub-indices and PTA values for the 36 Jersey females that run alongside the 72 ELITE and 36 national average (NA) Holstein-Friesian cows is presented in Table 1. The 36 Jersey cows are all of New Zealand ancestry.

Table 1. EBI, sub-indices and PTA values for ELITE and National Average (NA) and Jersey cows within the Next Generation Herd (ICBF, January 2019)

	EBI	Sub-Indices (€)						
		Milk	Fertility	Calving	Beef	Maintenance	Health	Management
ELITE	214	61	102	42	-15	16	5	3
NA	110	38	39	36	-11	7	2	1
JERSEY	185	64	58	39	-51	68	2	6

	PTAs				
	Milk Kg	Fat Kg	Prot kg	Calv Int	Survival
ELITE	+37	+10.7	+7.2	-5.3	+2.9
NA	+71	+6.3	+5.4	-2.0	+1.1
JERSEY	-329	+13.2	+1.1	-2.5	+2.1

All three groups of cows are evaluated under three pasture-based feeding treatments, which provide variable feeding levels at the shoulders of the grazing season. Both Holstein-Friesian groups are stocked at 2.75 cows/ha and the Jersey cows are stocked at 3 cows/ha.

Preliminary Results

The results for Year 1 (Table 2) of the study highlight the contrasting yet complimentary characteristics of the Holstein-Friesian genotypes (both the ELITE and NA) and the Jersey cows. Both Holstein-Friesian groups produce greater milk volume, but milk constituent values were considerably higher for Jersey cows. The Jersey cows are much lighter. The advantage of Jersey becomes particularly apparent when milk solids production is expressed per ha or per kg cow body weight. Extrapolated per ha, the Jersey cows produced 31 kg and 112 kg more milk solids per ha compared to the ELITE and NA genotypes, respectively. Yield of milk solids relative to mean bodyweight ranged from 0.82 for the NA cows to 1.10 for the purebred Jersey cows. Interestingly, body condition score was greater for the Jersey cows compared to both Holstein-Friesian groups.

Table 2. Cow performance details for year 1 of the study (2018)

	ELITE	NA	Jersey
Stocking rate (cow/ha)	2.75	2.75	3.00
Milk yield (kg)	5,539	5,499	4,276
Fat (%)	4.64	4.37	5.86
Protein (%)	3.69	3.60	4.24
Milk solids (kg)	462	433	434
Body weight (kg)	520	524	393
Body condition score	2.89	2.76	2.99
Milk solids/kg of body weight	0.88	0.82	1.10
Milk solids kg/ha	1,271	1,190	1,302

AI Sires

Another aspect of the Next Generation Jersey Herd is as a source of Irish bred high EBI Jersey AI bulls. Recent recruits to AI include NEXTGEN HITMAN (JE4764), NEXTGEN FIREFOX (JE4759), NEXTGEN PAC MAN (JE4612), NEXTGEN ENIGMA (JE4539) and NEXTGEN RUBY (JE4409).

Conclusions

The results presented are based on a single year of data (2018), and hence should be interpreted with caution. The results are, however, in line with previous research, and continue to suggest that there are potential advantages of using Jersey genetics for crossbreeding within the context of intensive Irish pasture-based production systems. These advantages are borne out of increased production efficiency and productivity per unit area. In light of concerns surrounding the challenges associated with low value male calves, it is advised that Jersey genetics be exploited responsibly. Calculate the number of replacements required, use sexed semen if feasible, and maximise use of high Dairy Beef index beef sires.