

Blazing the Trail for Jersey Genetic Diversity

by Angie Coburn, Dairy Procurement Specialist, Genex Cooperative, Inc.

Perhaps the most frequently discussed topic among Jerseybreeders during the past 10 years is inbreeding. With dire projections of the average U.S. Jersey approaching nine percent inbred by 2010, there was plenty cause for concern. Strategies to provide outcross genetics were discussed at grassroots levels among Jersey breeders. Allied industry personnel sought ideas that could be implemented in areas of product development. The prevailing directive from producers was the need to adopt practices that provide greater genetic diversity without sacrificing potential for genetic gains.

Herein lays the dilemma. The Jerseybreed's higher inbreeding values were a direct result of successful genetic selection of mating sires and cow families that rapidly advanced genetic gains in production. Producers similarly focused on heavy use of the Top 10 bulls ranked by JPI (Jersey Performance Index) as demonstrated by A.I. stud semen sales and American Jersey Cattle Association (AJCA) registrations by sire.

As it became more difficult to make mating decisions because of the close relationship of bulls to the population, two primary questions begged to be answered. Could we identify outcross bloodlines providing equal opportunity for genetic gain and if not, what decreased level of genetic gain was acceptable to increase the number of pedigrees available to make mating decisions? When making strategic decisions at Genex, it was our decision to combine the two approaches.

Sourcing Outcross Bloodlines

With a long history of forming global alliances and importing high-end genetic products from other countries, Genex formed a partnership in 2003 with the Danish cooperative, DANSIRE, an organization with both herd book and A.I. stud services. Why Dansire? Denmark's Jersey population provided the most opportunity for equivalent genetic potential and was quite unrelated to the U.S. bloodlines.

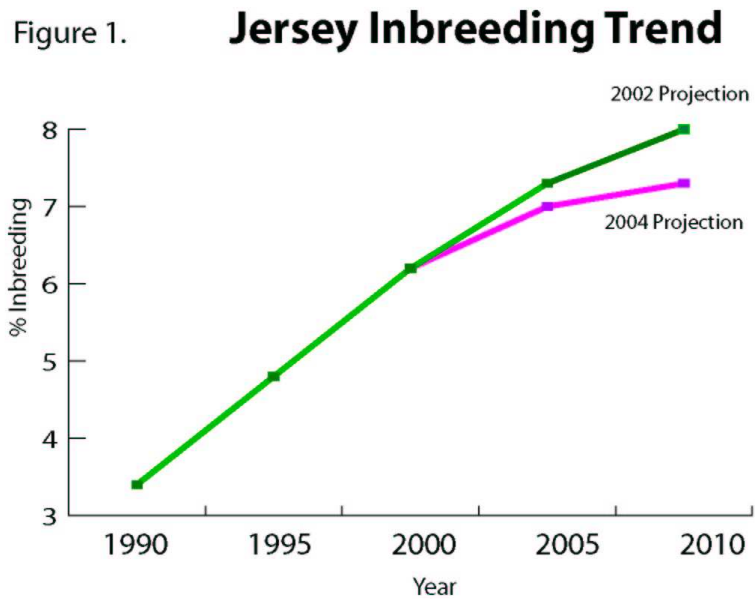
At the time of the decision, daughters of the top-rated udder bull, Lemvig, were showing early promise globally. Additionally many of the highest ranking Lifetime Cheese Merit bulls were sired by Skae Ide, a J Imperial son used exclusively by Dansire as a mating sire due to his premature death.

Since becoming allied partners, Genex and Dansire work together to identify bulls best suited for the U.S. goals of production and udder improvement. With the February 2007 genetic evaluations, sire rankings for 236JE0003 Q IMPULS and 236JE0004 JAS ARTIST reflect successful performance of U.S. daughters in their first lactation as compared to contemporary daughters of U.S. bulls used at the same time. Since both of these bulls were used as service sires at the farm level and as mating sires by A.I. studs, their low EFI (Expected Future

Inbreeding) ratings greatly contribute to the stabilizing of projected inbreeding levels shown in Figure 1.

Identifying a high-ranking proven bull with a low EFI is a critical step, but this approach alone has a limiting factor. Logically, this "superbull" can be mated to many bull mothers. Having a greater impact, is the

wise decision of the producer to use this bull widespread across his herd. The outcome is a once low EFI bull that no longer is an outcross in future generations. Greater effort has to be made in product development to increase the number of bulls utilized as mating sires and represented as maternal grandsires while simultaneously maintaining goals for genetic gain.



Unmatched Sampling Efforts

When looking at a three year history of Jerseybulls sampled by A.I. organizations, Genex leads not only in lower EFI rating, but also in the genetic levels of bulls sampled. The difference in overall average EFI by stud seems small, but Table 1 also demonstrates Genex offers more low EFI sires at a higher level for LCM when compared by stud. The extremely low average EFI for Genex sires sampled in 2007 is reflective of our use of IMPULS and ARTIST as mating sires. When sons of these two bulls are removed from the averages, Genex continues to lead the industry on average EFI and average Lifetime Cheese Merit of the remaining progeny test bulls.

Table 1. Comparison by Stud of Jersey Sires Sampled, 2004-2006

Stud	Less Than 6.0% EFI		All Bulls Sampled	
	No. Sampled	Average LCM\$	Average EFI	Average LCM\$
Genex/CRI	17	426	7.1	347
Stud A	11	330	7.7	310
Stud B	9	61	7.8	227
Stud C	3	308	7.7	296
Stud D	10	262	7.8	295

Stud E	2	46	7.6	227
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Furthermore, when looking at bulls sampled in 2004-2006, 91 percent of the bulls sampled by Genex met the requirements for the AJCA Young Sire Program and Genetic Diversity Program, a number unmatched by any other A.I. stud. The idea of improved genetic diversity is not an original one in Jerseycircles, but the Genex leadership in this area is clear. It is our commitment to provide our members and customers with the best opportunity to improve their profitability with the industry's most options for improving pedigree diversity balanced with potential for genetic gain.

Author Bio: As a Dairy Procurement Specialist with an emphasis on protein breeds, Angie Coburn coordinates all Jersey and other colored breed sire acquisitions and procures Holstein sires through traditional contracts and embryo purchases in the areas of New England, New York, Wisconsin and the western U.S.