

Producers share crossbreeding experiences

Over 50 herds share thoughts on Brown Swiss, Holstein, and Jersey crosses.

by Kent Weigel and Kristin Barlass

For years, crossbreeding has long been a popular tool for genetic improvement of pigs, beefcattle, and other livestock species. However, its use in dairy cattle has been minimal, at least in North America, due primarily to the Holstein cow's advantage in milk volume. Most research regarding crossbreeding in this country is outdated, and studies involving the Holstein, Jersey, and Brown Swiss breeds are nonexistent. Yet, a growing number of producers are experimenting with crossbreeding, and many questions have arisen about the results dairymen can expect when crossing various breeds.

To get some answers, Genex/CRI and the American Jersey Cattle Association funded a crossbreeding survey. The eight-page questionnaire was sent to more than 500 U.S. dairy producers who had crossbred cows in the DHI milk recording system, crossbred matings in the DRMS Raleigh bull fertility (ERCR) database, or crossbred calves in breed association "grading-up" programs. Fifty producers returned usable surveys (every producer didn't answer every question). The greatest number of respondents came from Minnesota, New York, Wisconsin, Indiana, Iowa, and Texas. Roughly 20 percent of these herds practiced rotational grazing, while the remainder followed more "conventional" management plans.

Reasons for crossbreeding, as well as the breeds chosen, varied according to the original herd's genetic composition. For example, non-Holstein herds generally looked to crossbreeding to improve milk yield. However, the majority of herds began with Holstein cattle, and nearly all looked to crossbreeding as a means of improving calving ease, fertility, or longevity.

Herds in our study had been crossbreeding for nine years, on average, and most (78 percent) used A.I. bulls for first- and later-generation crossbred matings. Of these herds, 41 reported mating crossbred cows back to a purebred bull from one of the parental breeds such as breeding a Holstein x Jersey cow to a purebred Jersey bull. Meanwhile, eight herds used purebred sires of another breed such as breeding a Holstein x Jersey cow to a Brown Swiss bull. Also, six herds used crossbred bulls of the same breed composition such as mating a Holstein x Jersey cow mated to a Holstein x Jersey bull.

A wide variety of breeds and breed crosses were represented in these herds. The most common cross, occurring in 17 herds, involved Holstein cows or heifers mated to Jersey bulls, while 12 herds mated Holstein cows or heifers to Brown Swiss bulls. "Backcrosses" of Holstein x Jersey cows to Jersey bulls, Holstein x Brown Swiss cows to Brown Swiss bulls, and Holstein x Brown Swiss cows to Holstein bulls occurred in roughly half a dozen herds each. Reported breed codes within the DHI system varied widely for these crossbred cows. For example, first-generation matings of Holstein cows to Jersey bulls resulting in offspring coded as "H", "J", or "X".

Producers were asked to score their purebred and crossbred cattle on a scale of 1 (much poorer than my other cows) to 5 (far superior to my other cows). Variables included fertility, calving performance, production, component percentages, survival, and slaughter value.

As shown in the table, **conception rate scores** were highest for Jersey male x (Holstein x Jersey) female, Brown Swiss male x Holstein female, and pure Jersey matings. Conception rate scores were poorest for pure Holstein matings. Based on results of this survey, it appears that crossbred matings involving Holstein dams can achieve conception rates comparable to those found in pure Jersey matings.

Do they like crosses? Producers share their experiences.* (5 = excellent; 1 = poor)								
Trait	BS x BS	BS x HO	HO x HO	HO x (JE x HO)	HO x JE	JE x HO	JE x (JE x HO)	JE x JE
Milk	2.4	2.9	3.8	3.0	2.8	2.5		2.0
Components	4.5	3.7	2.3	3.5	3.3	3.9	4.5	4.6
Cow survival		3.1	2.6			3.6	4.2	3.3
Heifer pregnancy rate	2.3	3.6	3.0			3.5		3.3
Cow pregnancy rate	2.4	3.5	2.7			3.3	3.7	3.6
Calving ease	3.6	2.7	2.2	3.0		4.5	4.4	4.5
Calf survival		3.0	2.9	3.2	3.6	3.2	2.8	2.3
Cull cow price		3.4	3.2			2.5		
Bull calf price		3.1	3.5	2.2		2.0	2.0	1.5

*Average producer scores for production, calving performance, fertility, survival, and carcass value of cows from each breed or breed cross, relative to other cows on their farms (BS = Brown Swiss, HO = Holstein, and JE = Jersey). Breed of sire (or service sire) is listed first in each cross, followed by breed(s) of dam. Scores were on a 1 (poor) to 5 (excellent) scale. Results are shown for each breed or cross that was represented in four or more herds.

Calving ease scores were highest (fewest problems) for matings involving Jersey bulls and virgin heifers of any breed, and were lowest (most problems) for matings involving Holstein heifers and either Holstein or Brown Swiss bulls. Interestingly, Holstein service sires caused more calving problems in pure Holstein heifers than in (smaller) Holstein x Jersey crossbred heifers.

Calf survival scores were highest for matings of Holstein males x Jersey females and were lowest for pure Jersey matings. In all cases, survival of crossbred calves was superior to that of pure Holstein or Jersey calves.

As expected, **milk yield** was highest in pure Holsteins and lowest in pure Jerseys, with all other breeds and crosses falling in between. Conversely, pure Jersey, pure Brown Swiss, and Jersey male x (Holstein x Jersey) female crosses had the highest **fat and protein percentages**, and all breeds and crosses had higher components than pure Holsteins. However, several producers noted that fat percentages of their crossbred cows were much higher than protein percentages, as compared with pure Holstein cows.

Scores for **functional survival** or ability to resist culling due to illness, injury, or infertility were highest in cows from Jersey sires x (Jersey x Holstein) dams, followed by cows from Jersey sires x Holstein dams. **Longevity scores** were poorest for pure Holstein cows.

Slaughter prices of cull cows were highest for pure Holstein cows and cows resulting from crossing Brown Swiss sires x Holstein dams. **Prices of bull calves** were similar, with pure Holstein and Brown Swiss x Holstein calves bringing the highest prices, and prices dropped as the percentage of Jersey genes rose.

Overall, crossbred cattle from the breeds discussed herein are likely to show improvement in pregnancy rate, calving ease, component percentages, and survival relative to pure Holsteins. However, milk volume will be sacrificed, and producers will typically receive less revenue from animals that are sold for slaughter. Most producers (87 percent) who responded to this survey indicated that they would continue crossbreeding in the future, but it is unlikely that those who responded were a random sample of all producers with crossbred cattle.

Additional research is needed regarding the specific amount of heterosis (hybrid vigor) that producers can expect for each trait when crossing each of the major dairy breeds. Half a dozen major U.S. universities have begun, or will soon begin, crossbreeding studies in their experimental herds, so many of these questions will be answered over the next years.

Weigel is assistant professor, extension genetics specialist, and University of Wisconsin programs administrator. He is also a National Association of Animal Breeders geneticist.

Barlass is an area representative for the American Jersey Cattle Association and is based in California.

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