

Genetic Change in Dairy - Are You Keeping Up?

by Jack McAllister

The U.S. dairy population has been undergoing genetic change for the last 50 years. Since the adoption of the animal model genetic evaluation methods in 1990, that genetic change has been taken into account. A genetic base is established for each dairy breed and the genetic evaluations of bulls and cows are expressed as a deviation from that base. The base is changed every five years. It was most recently changed in February 2005. The current genetic base is cows born in 2000 and will remain so until 2010 when it will be updated to cows born in 2005. It had previously been changed in 2000.

The following two tables show the genetic change which took place between 1990 and 1995 and between 1995 and 2000.

Estimated Genetic Change In Predicted Transmitting Ability (PTA) for 2000 Base Change (1990-1995)			
Trait	Milk	Fat	Protein
Ayrshire	369	12	10
Brown Swiss	535	22	18
Guernsey	512	20	18
Holstein	674	20	20
Jersey	564	18	20

Estimated Genetic Change In Predicted Transmitting Ability (PTA) for 2005 Base Change (1995-2000)			
Trait	Milk	Fat	Protein
Ayrshire	259	9	8
Brown Swiss	479	19	16
Guernsey	420	16	12
Holstein	592	18	19
Jersey	442	16	16

As you can see from the tables, the genetic change which took place between 1990 and 1995 was a little greater for milk fat and protein yield than the change which took place between 1995 and 2000. Except for the Ayrshire breed, fat and protein yield is changing 3-5 pounds per year and milk yield from 88 to 118 pounds per year based on the most recent results. These results are quite impressive, especially for the Brown Swiss and Guernsey breeds which have relatively small populations of milk-recorded AI bred cows and AI bulls. These results indicate that strong selection for yield traits is being practiced by these breeds in comparison to Holsteins which have made the greatest genetic advance in the last five years.

This substantial rise in genetic merit each year should be considered in choosing among active AI bulls in all the dairy breeds. This can be done most effectively by using the percentile ranking of bulls for these yield traits and the lifetime MN\$ index. Using percentiles lets you know their ranking in the whole population on a percentage basis. For example a bull in the 70th percentile has 70 percent of the bulls ranking below him and thus he ranks in the top 30 percent. To make significant genetic progress, one should be picking bulls in the 80th percentile or higher. By using such a high percentile you can be assured that your choices are in the top 20 percent and staying ahead of population as it makes continual genetic improvement.