



What is the Most Important Trait?

Genetic improvement programs often fail to consider the long term effects of genetic selection. No matter which traits we think are most important to select for, there is a trait that should always rank first in importance. That trait is the ability of a population to reproduce itself. In this article that ability will be referred to as fitness. Without fitness, there is no long term future because the population will not survive.

Fitness, or the ability of a population to flourish and grow in size, can be considered a combination of several traits. It is the combination of the ability to conceive, then give birth to a live calf, and finally survive for a long time so that the reproductive process can be repeated many times.

Daughter Pregnancy Rate (DPR) is a measure based on the calving interval of a bull's daughters and so predicts their ability to become pregnant. Daughter Calving Difficulty (DCD) predicts the ability of a bull's daughters to calve without assistance and Daughter Still Births (DSB) predicts the ability of a bull's daughters to give birth to a live calf. When attempting to improve calving ability, selection should be placed on maternal calving difficulty and stillbirths rather than direct calving difficulty and stillbirths. The direct, or sire, calving measures only affect the resulting generation and so are important when selecting bulls to mate to virgin heifers. Maternal values create permanent genetic change that remains in the population for future generations. Productive Life (PL) predicts how many extra months a bull's daughters will stay in the herd. So, a selection index combining PL, DPR, DCD, and DSB allows us to predict the fitness of a bull's daughters.

The table to the right shows a fitness ranking of Holstein bulls that are at least 95% reliability for the four traits mentioned. The Holstein fitness index places a weighting of 33% on PL, 33% on DPR, 17% on DCD, and 17% on DSB. The fitness value in the table is that bull's percentile ranking for fitness. For example, the Holstein bull, Wizard's percentile ranking is 99. This means that he ranks higher than 99% of the active A.I. Holstein bulls, or that he is in the top 1% of the active A.I. Holstein bulls for the fitness index.

The list of Jersey bulls that are at least 85% reliability is on the next page. Because there are no calving measures for Jerseys, their fitness index is a weighting of 50% PL and 50% DPR.

Please note that this ranking is not an endorsement or a criticism of any of the bulls or their breeders or owners. Furthermore, I am not suggesting that fitness should be the only thing that we select for. However, if we ignore fitness, we may find that it takes a lot of extra effort and money to maintain the size of our cow herds. Are you sick and tired of your cows being sick & tired? If you are interested in a daughter fitness ranking of all active A.I. bulls, send an email to jmetzger@hickorytech.net.

Holstein Bulls with at least 95% Reliability

NAAB	Short Name	Fitness	PL	DPR	DCD	DSB
1HO6360	WIZARD	99	6.8	3.7	6	4.3
7HO6417	O MAN	98	6.5	2.7	5	7.1
14HO3597	POTTER	98	5.7	1.8	5	4.4
29HO8538	DIE-HARD	94	4.1	2.8	7	5.7
1HO6721	HOSEA	94	3.4	1.6	5	4.4
1HO6833	TRES	91	3.7	0.4	5	3.7
29HO10124	BOLIVER	84	4.1	-0.2	5	5.3
7HO6782	ZENITH	80	2.7	1.7	6	7.4
29HO9899	TOUCHDOWN	79	1.0	1.8	6	5.4
7HO6168	AMATEUR	76	1.9	2.2	7	7.4
11HO7319	ALTASUEDE	75	2.0	0.3	5	5.8
7HO6745	ONYX	74	1.1	2.0	6	7.3
29HO10370	MALIN	73	0.5	1.0	5	5.6
200HO1196	TAYLOR	73	1.8	0.8	6	5.9
7HO7872	ADVENT-RED	63	1.9	2.3	8	8.9
11HO6708	ACTIVIST	61	2.3	1.0	6	9.2
7HO6758	MR SAM	57	1.8	-1.5	5	4.8
1HO6670	RIO	54	2.2	1.5	8	9.0
250HO803	CHAMPION	47	0.9	-1.1	5	6.3
72HO1758	LHEROS	46	0.2	-0.6	6	5.3
29HO10644	GARRISON	45	1.1	-0.8	7	5.2
29HO9155	PIPPEN	31	1.6	-0.6	7	8.8
11HO6414	ALTAALLEGRO	26	2.3	-0.4	9	8.9
29HO10356	REECE	25	2.7	0.8	9	12.4
94HO10276	DUNDEE	21	-1.6	0.0	8	6.7
7HO5708	BLITZ	18	0.9	-2.9	7	5.7
200HO7030	TALENT	18	3.8	-2.4	9	8.7
6HO817	JORDAN-RED	17	0.4	-0.6	7	10.3
29HO9436	FREDERICK	15	0.6	-1.6	8	7.6
200HO3067	SEPTEMBER STORM	15	-0.1	-1.3	8	7.6
200HO44	MORTY	5	-4.1	-2.3	7	5.0
200HO3071	SPY	5	0.2	-2.8	10	6.7
7HO6682	MARMAX	3	-0.2	-1.0	10	11.1
94HO10156	KITE *RC	0	-4.0	-2.0	12	9.8

Survival of the Fittest

In the article about fitness you may have felt that you had heard of the concept of fitness before. In 1859, Charles Darwin wrote a book titled, "On the Origin of Species by Natural Selection, or The Preservation of Favored Races in the Struggle for Life," which was the basis for the Theory of Evolution. He said that the environment selects those individuals best fitted to survive, while individuals less fitted to survive failed to reproduce. This was called natural selection or survival of the fittest. Natural selection does explain adaptation or small changes within a species. However, natural selection was expanded in an attempt to explain the origin of life. Some scientists say that life arose from chemicals by random processes or chance and that major life forms arose by random and unguided processes including natural selection over millions of years that resulted in simpler forms evolving into more complex forms (chemicals to bacteria to fish to amphibians to mammals to apes to humans).

However, in my opinion, scientific evidence has not demonstrated this to be true. An alternative explanation for the origin of life called Intelligent Design has been proposed by other scientists. The Theory of Intelligent Design states that the first life and the major life forms arose as a result of the creative action of a personal and infinite designer. Intelligent Design maintains that living organisms exhibit complexity that cannot be explained by blind, natural processes. Organisms appear designed because they are. Examples of biological design are information rich systems like the DNA genetic code and irreducibly complex systems such as the features of an individual cell.

Opponents of Intelligent Design say that Evolution proposes a natural cause and Intelligent Design proposes a supernatural cause. However, the correct contrast is that Evolution proposes an undirected cause and Intelligent Design proposes a directed cause.

The last thing I want is for you to blindly follow my position or any other on the origin of life. Instead, I hope that you will examine the evidence and make your own decision.

*For additional information, see "Origins: Making Sense of Creation & Evolution" by Don Bierle

Updated Genetic Evaluations

Dairy bull and cow genetic evaluations will be released on January 12th. If you would like to use this updated information to improve your genetic system, please contact us.

Jersey Bulls with at least 85% Reliability

NAAB	Short Name	Fitness	PL	DPR
236JE3	IMPULS	90	3.5	1.3
7JE590	ACTION	89	3.7	1.1
1JE370	ROULETTE	86	3.8	0.8
200JE989	COUNTRY	78	3.1	0.6
14JE306	FUTURE	73	1.9	0.9
122JE5198	ABE	64	4.1	-0.7
200JE103	JULIAN	57	3.2	-0.5
505JE101	LEGION	39	2.1	-0.7
7JE620	MAXIMUS	39	2.1	-0.7
14JE365	REBEL	29	1.9	-1.1
76JE119	BOMBER	17	-1.3	0.1
200JE303	SULTAN	10	0.4	-1.5
140JE330	MANNIX	3	-1.2	-1.3
122JE5181	SABER	1	-2.0	-2.1
1JE506	LIEUTENANT	0	-2.0	-2.2

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