Longevity and Reasons of Culling of German Holstein-Friesian under Libyan Conditions
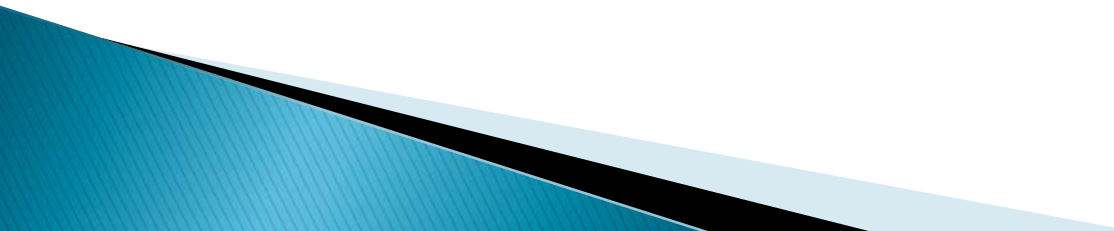
▸ **Salem A. M. Abdalla Bozrayda, Alshakmak F. H. Al-Durssi I. A. R. S. Gargum**
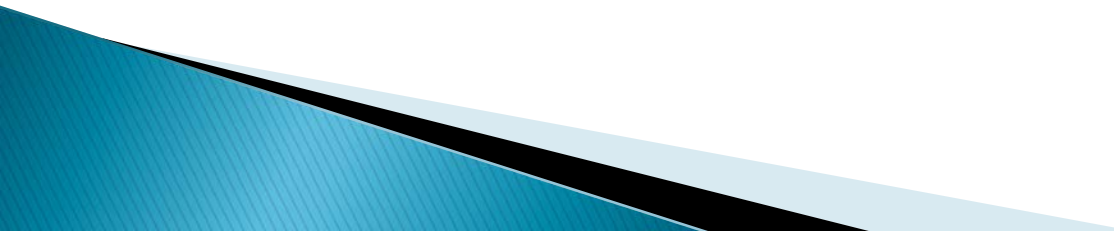
▸ **University of Benghazi Libya**

Objectives of study

- Factors affecting Longevity traits and milk yield.

- Estimates of genetic parameters.

- Investigate reasons of culling

Materials and Methods

- Data:

- 2196 first lactation records
- 95 sires

- Foundation herd imported from Germany in 1986
- Imported semen for AI

- Dutch company managed from 1986-1991
- 3xmilking

- At Ghot Alsultan 50 Km south east Benghazi

Traits:

- True Herd Life

- Productive Live
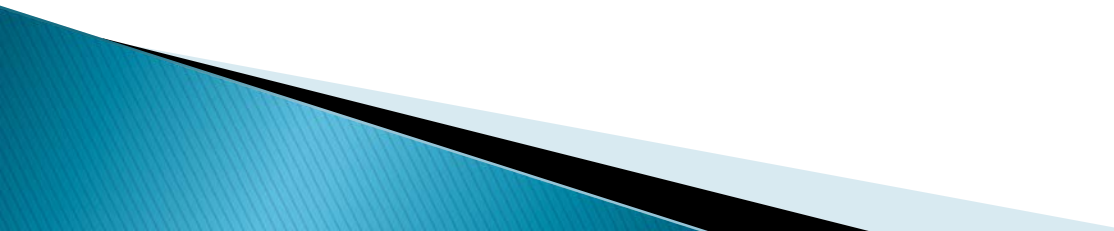
- Number of latation

- 305 day milk production

Model:

$$Y_{ijklmno} = \mu + O_i + G_j + A_k + L_l + E_m + M_n + S_o + b_{(DO)} + E_{ijklmno}$$

$Y_{ijklmno}$	=	Traits studied effect (True herd life, productive life and number of lactation),
μ	=	Overall mean,
O_i	=	the fixed effect of the ith origin of sire,
G_i	=	the fixed effect of the jth Generation of cow,
A_k	=	the fixed effect of the kth age at first calving cow,
L_l	=	the fixed effect of the lth level of milk production,
E_m	=	the fixed effect of the mth year of calving,
M_n	=	the fixed effect of the nth month of calving,
$b_{(DO)}$	=	simple regression coefficient of the studied trait on days open,
$S_o =$	=	the random effect of the nth sire, and
$E_{ijklmno}$	=	the residual effect.

Level of production

- Low: less than 7000 liter
- Medium: 7000–8000 liter
- High: greater than 8000 liter
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- Origin of Sires:
- North America (USA & Canda)
- Germany
- Libya (locally born)

Results

- All factors included in the model were had significant effect (P>0.05) on longevity traits and milk yield of Holstein Friesian cows

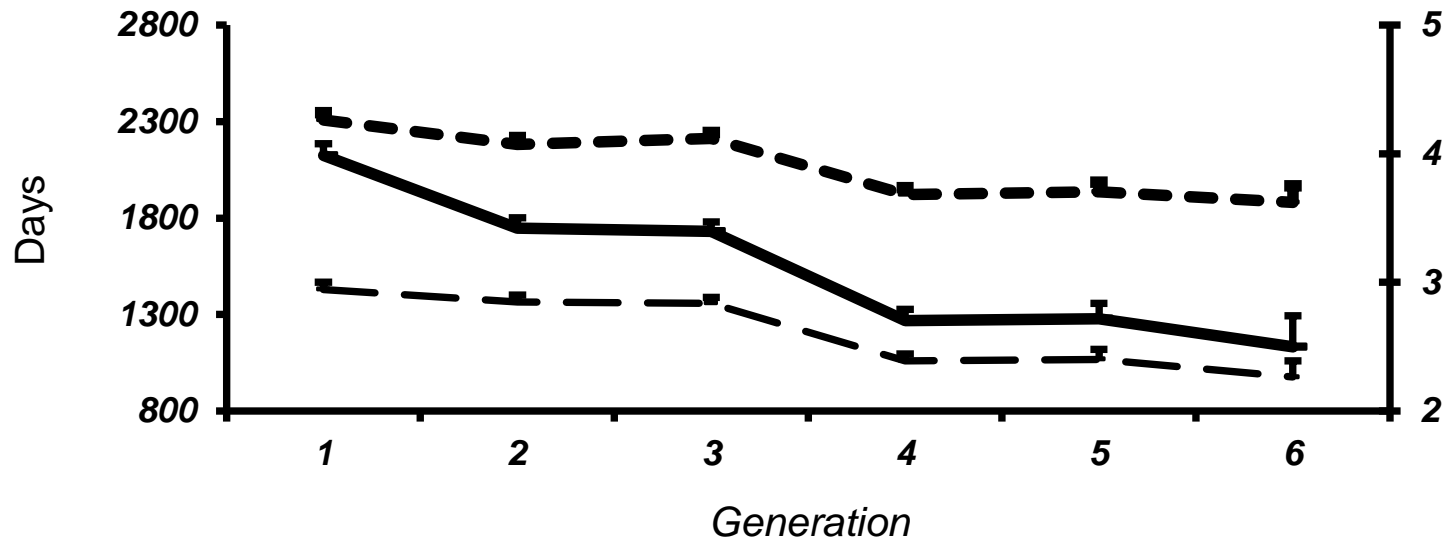- Exception: the effect of age at first calving and month of calving on true herd life.

Level of production

Level of milk production	N	True herd life (days)	Productive life (days)	Number of lactation
		#		
Low	525	2004.07 ± 760.11^{a}	1162.55 ± 759.98^{a}	3.08 ± 1.76^{a}
Medium	1402	2237.72 ± 817.16^{b}	1383.56 ± 827.06^{b}	3.54 ± 1.91^{b}
High	269	2239.76 ± 899.83^{b}	1395.46 ± 919.77^{b}	3.59 ± 2.03^{b}

Origin of sire

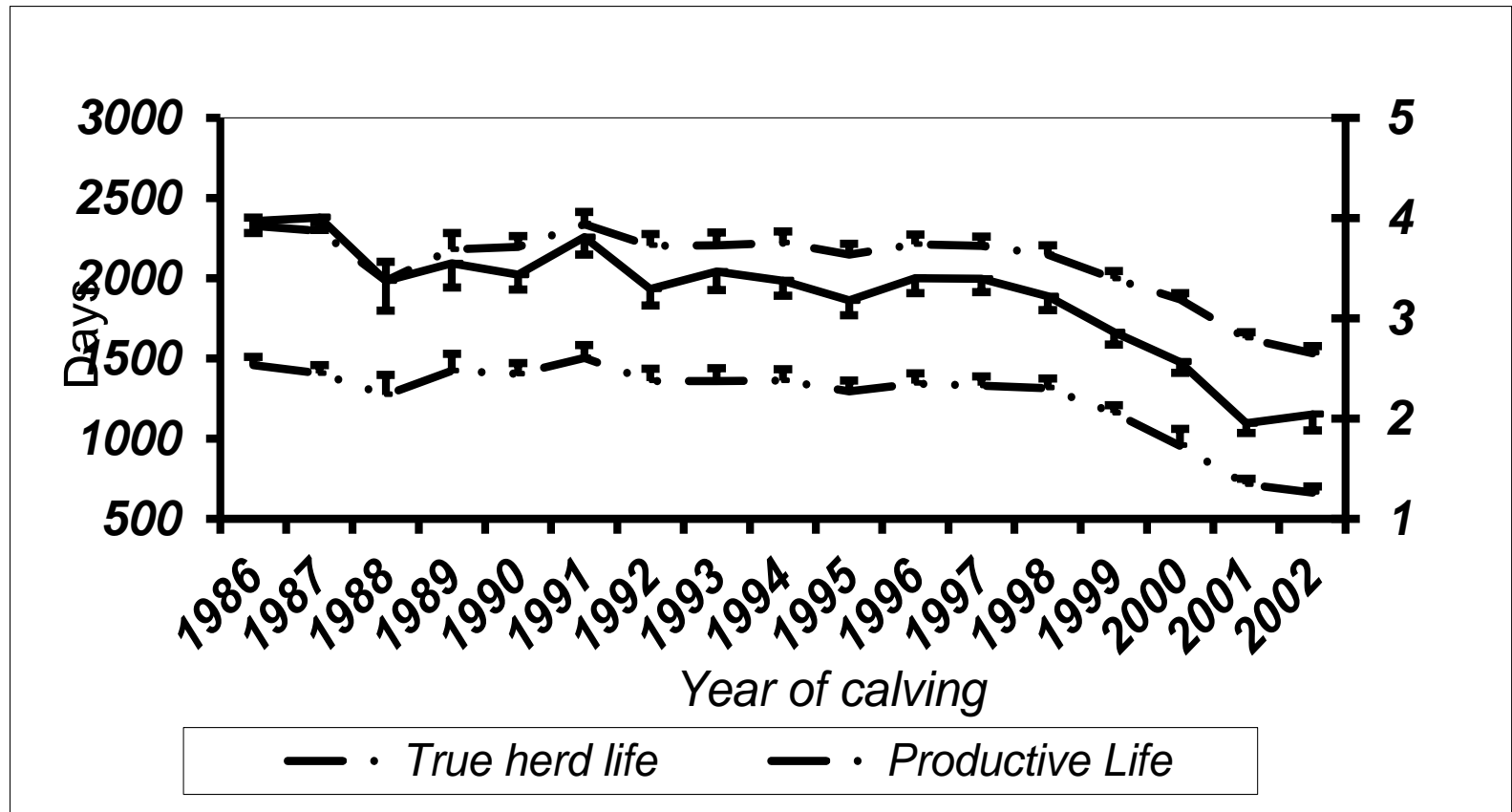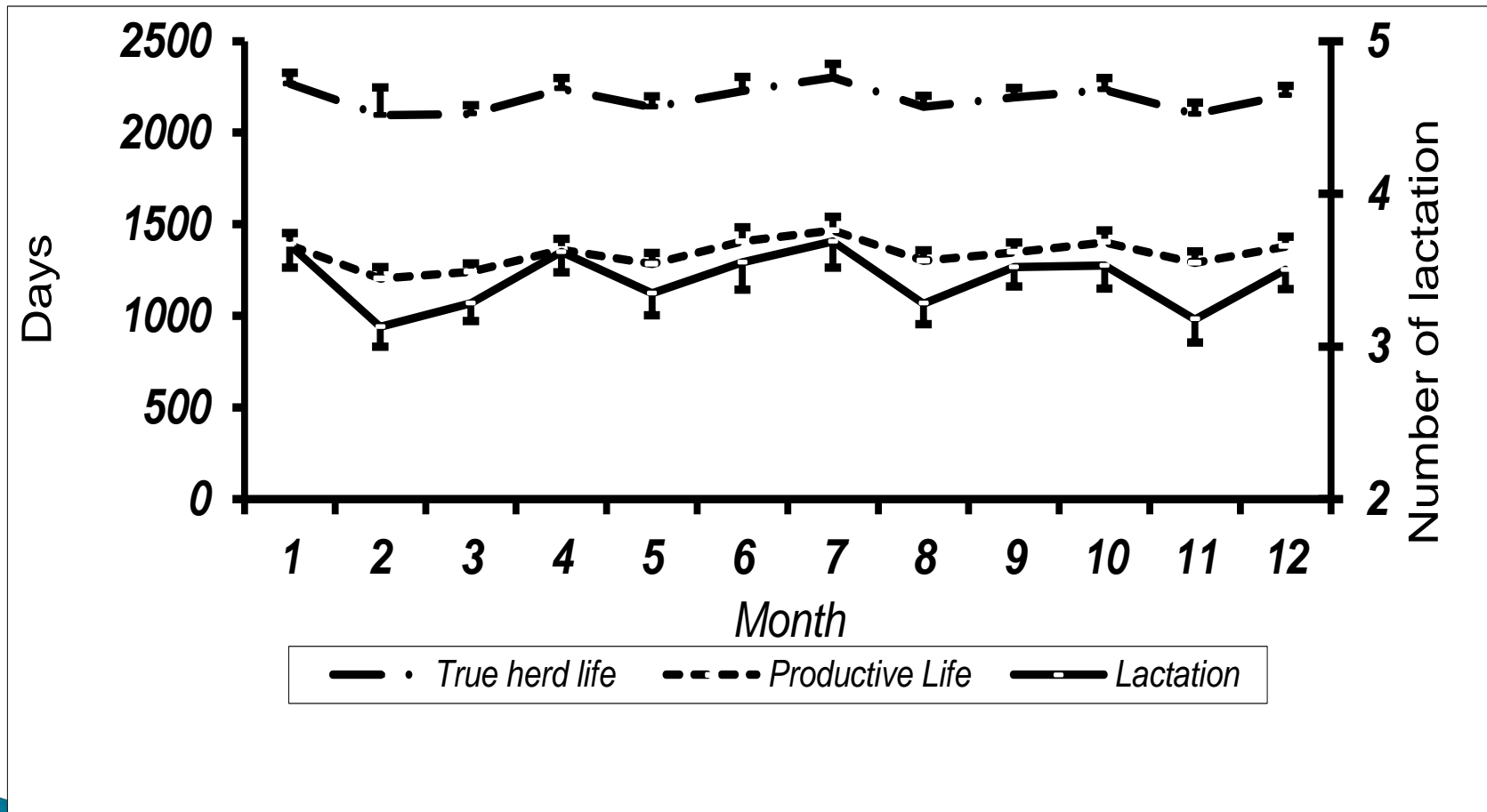| Origin of Sire	True herd Life (days)	Productive Life (days)	Number of Lactation	Milk yield 305 days (liter)
North American	2374 ± 747[a]	1538± 735[a]	4.10 ± 1.72[a]	8082±1204[a]
German	2211 ± 848[a]	1364±857[b]	3.51 ± 1.96[b]	7888±1086[a]
Libyan	2031 ± 683[b]	1166± 690[c]	3.02 ± 1.60[c]	7435±946[b]

Generations

Generations

Age at first calving
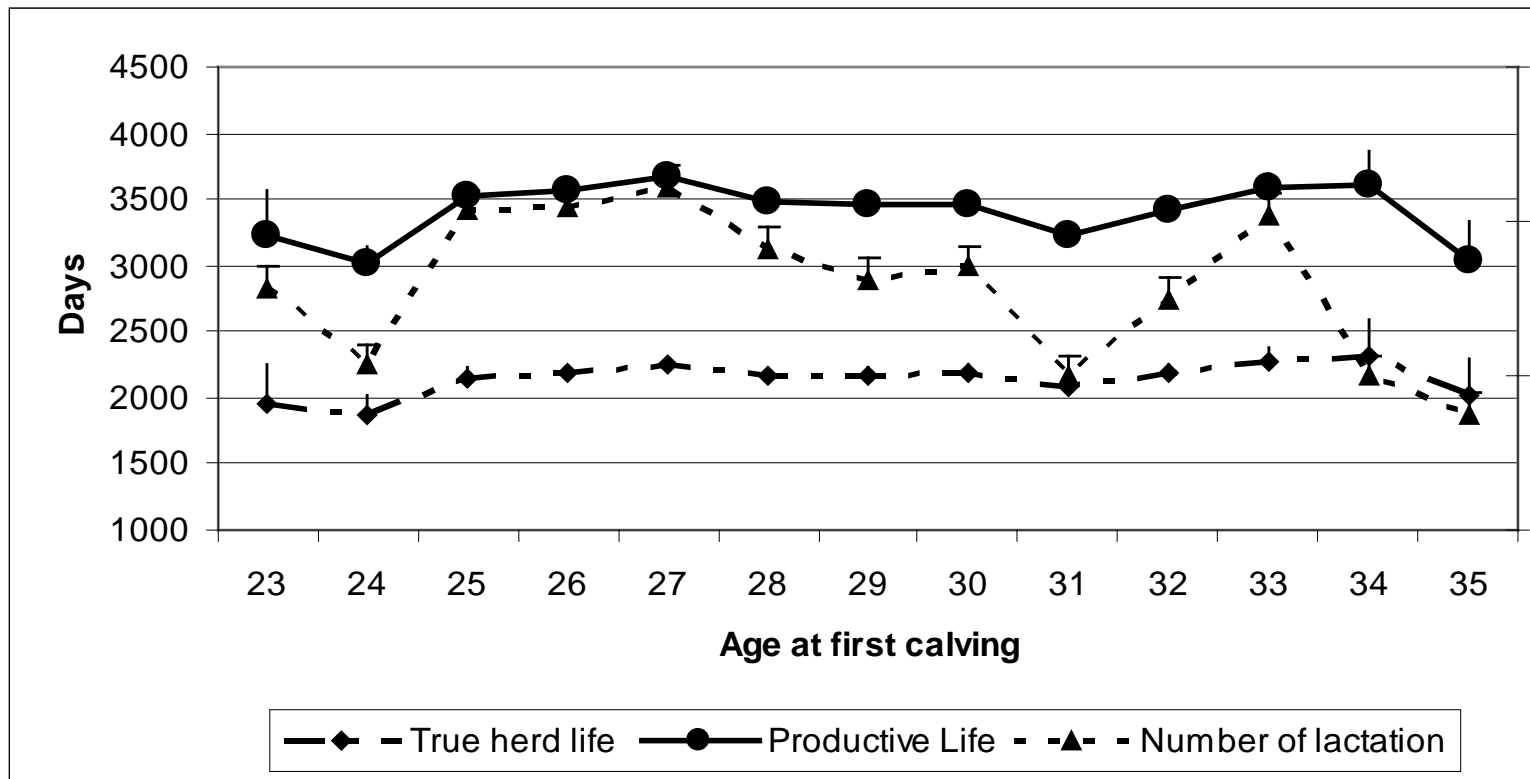
Year of calving

Month of calving

Genetic Parameters
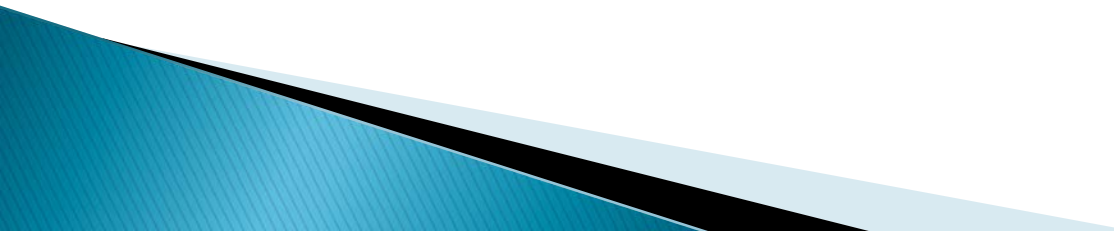
Traits	True herd Life	Productive life	Number of lactation	Milk yield 305 day
True herd life	0.064 (0.035)	0.993	0.941	0.126
Productive life	0.995	0.072 (0.036)	0.942	0.125
Number of lactation	0.971	0.974	0.056 (0.037)	0.117
Milk yield 305 day	0.350	0.370	0.42	0.055 (0.034)

Reasons of culling
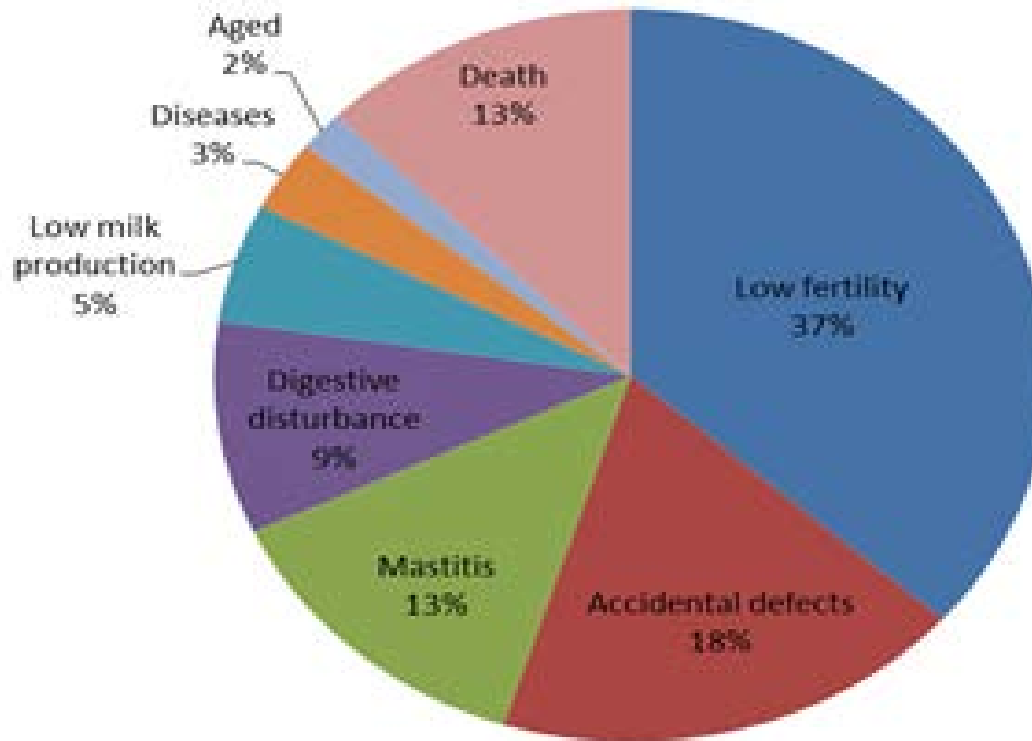
Conclsion

- Level of milk production was related with longevity traits but no differences between medium and high producing cows.

- NA sires had daughters with higher longevity traits than German and Libyan sires. This might be due to heterosis.

- Longevity traits will respond slowly to direct selection but will respond moderately indirectly through selection for high milk yield.
- Longevity traits were genetically highly correlated.

- Cows could be bred at age of 15 to 16 month to calve at age 25 to 27 month which have better longevity.
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- Heterosis increase longevity at early generation while inbreeding decrease it at late generation.

- Lower fertility, accidental defects, mastitis and digestive disturbance where major reasons for cow to leave the herd.

Thanks