

# Profitable Lifetime Index – £PLI

An economic breeding index for UK all-year-round calving herds



## What is the £PLI?

The national Profitable Lifetime Index (£PLI) is published by AHDB Dairy as part of its genetic evaluation service. The £PLI is a within-breed genetic ranking index developed for UK dairying conditions in consultation with industry partners and is expressed as a financial value.

The £PLI will:

- Promote yield while protecting milk quality
- Increase emphasis on fertility
- Improve functional type – Feet & Legs and Udders
- Increase emphasis on longevity
- Improve udder health and lameness
- Reduce costs associated with maintenance
- Improve calving performance

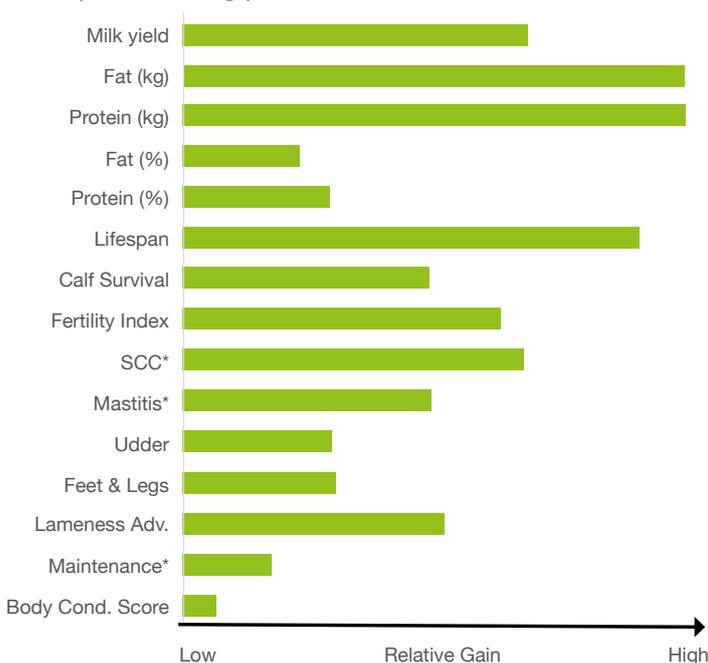


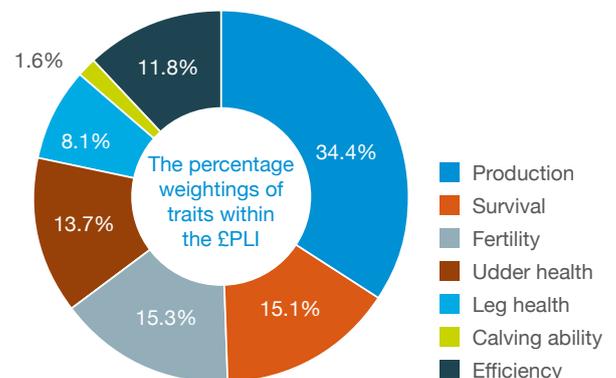
Figure 1. Relative genetic gain for a range of traits, based on the average of all available Holstein bulls; July 2018 (\* trait reversed for presentation purposes)

## £PLI explained

- The £PLI value represents the additional profit a high £PLI bull is expected to return from each of its milking daughters over her lifetime compared with an average bull of £0 PLI. The £PLI reflects the latest UK market and farming conditions
- The £PLI is a within-breed ranking. Bulls of each dairy breed will be shown on a separate breed base and £PLI values from different breeds are therefore not directly comparable

## When to use the £PLI?

- The £PLI is recommended for use by all-year-round calving UK farming operations
- £PLI should be used as the initial screening tool in bull selection; then look within this group for the traits that most need improving in your herd. This will vary with individual herds but should include the Lifespan and Fertility indexes
- Using the £PLI to select the best bulls to breed profitable cows for typical all-year-round calving UK systems



## £PLI – Frequently asked questions

### 1. What are the relative weightings in the £PLI on production and health traits?

The £PLI has approximately 35 per cent weighting on production and 65 per cent on health and fitness, placing a particularly strong emphasis on female fertility, longevity, udder and leg health and maintenance cost to reflect the efficiency with which the cow produces milk.

### 2. What is the maintenance cost trait and how is it calculated?

Farmer experience and research indicate the greater cost of feeding a larger cow than a smaller one. If two cows are identical in every other way (production, health, fertility, etc.) the smaller cow, which costs less to feed, will be more profitable and have a higher £PLI. The cost of maintaining a cow is related to its weight. As we do not routinely weigh dairy cattle, we have studied the traits most closely related to the cow's weight. These traits are stature, chest width, body depth and angularity. These traits are closely correlated to liveweight and are, therefore, used as an indicator of the costs of maintenance.

### 3. What is the Mastitis Index?

The Mastitis Index allows farmers to breed cows with improved resistance to mastitis. This trait can be used alongside the more familiar SCC to tackle incidence of mastitis directly.

### 4. What is used in the Lameness Advantage Index?

The Lameness Advantage Index combines existing type data for Locomotion and Feet and Legs, with bone quality scores, digital dermatitis and lameness records to allow farmers to breed cows with improved resistance to clinical lameness. This index helps to address a costly welfare issue faced by British dairy farmers today.

### 5. How should the Calf Survival Index be used?

The Calf Survival Index can be used to improve calf survival rates between tagging and 10 months of age by selecting bulls with above zero PTAs.

### 6. How does the Calf Survival Index differ to the Lifespan Index?

Calf Survival is based on BCMS records of calf deaths between tagging and 10 months of age when mortality is high, but does not include stillbirths or deaths before tagging. Lifespan PTAs on the other hand predict the survival of animals once they are in the milking herd. These two indexes have a correlation of +0.4 so are not the same trait, as the common causes of calf deaths are not the same as the common reasons for cows leaving the herd.

### 7. Can £PLI be used to compare cattle of different breeds with one another?

£PLI is a breed-specific index with all values and Predicted Transmitting Abilities (PTAs) calculated on each breed's own base. Anyone wishing to make across-breed comparisons is advised to contact AHDB Dairy for a conversion formula for this purpose.

### 8. Which type of herds should use £PLI as their main breeding goal?

The index is recommended as the primary selection tool for UK dairy herd operating an all-year-round calving system. £PLI should be used as an initial screening tool for bulls and, following this, producers are advised to place emphasis on traits that need improvement in their own herd. The Spring Calving Index (£SCI) and Autumn Calving Index (£ACI) are available solely for producers operating a spring block-calving or autumn block-calving system, respectively.

UK genetic evaluations are undertaken and published by AHDB Dairy three times a year: April, August and December.

## Further information

For more information on AHDB Dairy breeding and genetics, visit [dairy.ahdb.org.uk/breeding](http://dairy.ahdb.org.uk/breeding) or email [breeding.evaluations@ahdb.org.uk](mailto:breeding.evaluations@ahdb.org.uk)

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