Dairy Science &Technology

(Animal Husbandry and Dairying)

E –Content

Selection and Culling of Dairy Animals

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E –Content(Pre Ph D Course work)

(Dairy Science &Technology (Live stock production and management)

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1. Introduction

India is the world's largest milk-producing country, and the success of the dairy industry largely depends on maintaining genetically superior and productive dairy animals. Scientific **selection** and **culling** are two of the most important practices that improve productivity, genetic progress and profitability.

.Selection of Dairy Animals

Selection is the process of choosing genetically superior animals for breeding and future production based on their performance, pedigree, and genetic merit.

Objectives of Selection

- Enhance genetic potential.
- Increase milk production and milk fat and SNF percentage.
- Enhance reproductive efficiency.
- Improve disease resistance.
- Reduce maintenance costs.
- Improve overall herd productivity.

Methods of Selection

A. Individual Selection

Animals are selected based on their own performance.

Selection Criteria

- Milk yield
- Body weight
- Growth rate
- Lactation length.

B. Pedigree Selection

Selection based on the performance records of ancestors.

Important records include:

- Dam’s milk yield
- Sire’s breeding value
- Family production records
- Genetic history

C. Family Selection

Selection based on the average performance of related family members.

Useful for traits having low heritability.

D. Progeny Testing

Selection of breeding bulls based on the performance of their daughters.

It is considered the **most reliable method** for evaluating dairy sires.

E. Genomic Selection

Selection based on DNA markers and genomic information.

Culling of Dairy Animals

Definition

Culling is the planned removal of animals from the herd due to poor productivity, disease, infertility, old age, or undesirable genetic traits.

Types of Culling

A. Voluntary Culling

Performed intentionally by the farmer for management reasons.

Reasons include:

- Low milk production
- Poor milk quality
- Old age
- Poor genetic merit

B. Involuntary Culling

Occurs due to unavoidable circumstances.

Reasons include:

- Mastitis
- Lameness
- Infertility
- Severe injury
- Accidents
- Infectious diseases
- Death

Advantages of Culling

- Higher average milk production
- Better genetic improvement
- Lower disease prevalence
- Reduced feeding costs
- Improved reproductive efficiency
- Increased profitability

Disadvantages of Culling

- High replacement cost
- Temporary reduction in herd size
- Risk of removing genetically valuable animals
- Increased expenditure on replacement heifers

Relationship Between Selection and Culling

Selection	Culling
Selects superior animals	Removes inferior animals
Improves genetic merit	Improves herd efficiency
Focuses on future generations	Improves current herd performance
Enhances productivity	Reduces production losses

Conclusion

Selection and culling are complementary herd management tools essential for improving dairy herd productivity and profitability. Selection ensures the propagation of genetically superior animals, while culling removes inferior, diseased, and economically unproductive animals. Together, these practices enhance milk production, reproductive efficiency, disease resistance, and genetic progress.

References

1. ICAR. *Handbook of Animal Husbandry*. Indian Council of Agricultural Research, New Delhi.
2. National Dairy Development Board (NDDB), India. *Dairy Husbandry Manuals*.
3. Bourdon, R. M. (2014). *Understanding Animal Breeding*. Pearson.
4. Simm, G. (2000). *Genetic Improvement of Cattle and Sheep*. Farming Press.
5. FAO. *Dairy Production and Herd Management Manuals*.
6. ICAR–National Dairy Research Institute (NDRI), Karnal. Training Manuals and Extension Publications.
7. Nicholas, F. W. (2010). *Introduction to Veterinary Genetics*. Wiley-Blackwell.