Subject

# Animal Husbandry

Topic

# Methods of Farm Animal Improvement

Theme

# Animal Improvement

Class

# SS 3

# LESSON OBJECTIVES

At the end of the class,students must be able to:

- State the meaning and terms used in animal improvement
- List the aims of farm animal improvement

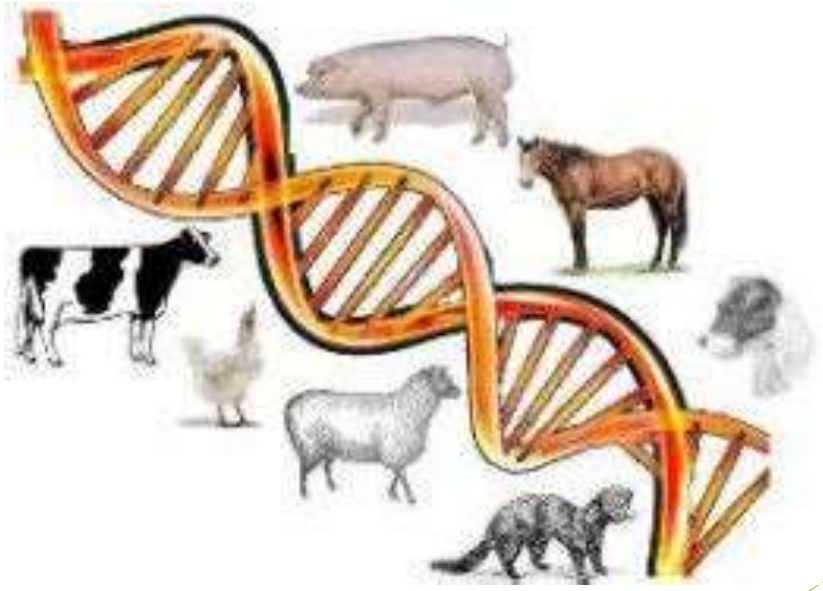
# Definition of Animal Improvements

Animal improvement is defined as **the process whereby inherited superior traits are transferred from one animal to the other of the same species**.

- Certain characteristics such as good feeding conversion, growth rate, meat quality, high milk yield, good body form, etc. are major considerations in animal improvement.

There are three processes or methods of animal improvement. These are **introduction, selection and breeding**.

- Introduction is the bringing into the farm or a country, high quality breeds of livestock with a high productive capacity and other good desirable characteristics from another farm or country.



# INTRODUCTION

Introduction is the bringing into the farm or a country, high quality breeds of livestock with a high productive capacity and other good desirable characteristics from another farm or country. Before the introduction of such animal from another (exotic breeds), one must be sure that such breeds possess higher quality characteristics than the local breeds. Different breeds of farm animals exist and these include the local breeds, imported breeds and the cross breed.

The local breeds are usually small animals, slow-maturing, poor producers, but adapted to local environment and resistant to many diseases.

The exotic (imported) breeds are big animals, early-maturing, good producers but may not adapt to local environment and not resistant to many diseases. To obtain a balance, the exotic breeds are used to mate the local breeds to obtain cross breeds which will now combine all the good qualities of exotic and local breeds.

## Advantages of Introduction

- Breeds which are not originally present in the home country are introduced
- It enhances greater productivity
- It leads to the absence of pests and diseases
- Breeds may perform better in terms of quality and quantity, if it is able to adapt to local environment .

## Disadvantages of Introduction

- It may introduce new diseases (s) to the area.
- It may introduce new pest(s) to the area.
- It may have the problem of adaptation to the new area.
- It may not perform maximally.

# SELECTION

Selection is the process of picking or selecting from a mixed population, those animals with breeding value as parents.

- Selection is undertaken to maximize genetic gain. It helps to select animals that are capable of transmitting their genetic attributes to their offspring. Animals with desirable characteristics like good meat production, egg laying etc, are selected. Selection is grouped into two main classes

- **Natural Selection**: This is the ability of individual animal to weather through unfavourable environmental forces to survive and reproduce.

Those that are unable to survive die off.

- **Artificial selection**: This selection is done by man using his intelligence and influence to select and mate animals in order to increase the number of animals.

There are four types of artificial selection

- **Mass selection**: Animas are selected or rejected on the basis of their own performance (merit). Animals with the desired characteristics are chosen in preference to those not possessing them from a large group of animals.
- **Progeny selection**: Animals are selected on the performance of their progeny or offspring. Mothers of the best performed offspring are retained while the mothers of offspring that do not perform well are discarded.

## Advantages of Selection

- It ensures that only the best naturally available animal is selected.
- Animals with desirable characteristics are selected.
- Animals from best breeds are bred for distribution
- Animals with undesirable characteristics are detected and rejected

- Selection reduces the spread of diseases.
- It also reduces the spread of parasites associated with breeding stocks.

## Disadvantages of Selection

- Selection is tedious and time consuming.
- It is very costly in terms of time and money
- It requires expertise which may not be readily available.
- It brings about elimination or exclusion of some desirable traits of some parent stock.
- No new desirable characteristics are introduced.

# Breeding

Breeding involves the breeding or development of animals by transferring inherited qualities from parents to offspring.  This is achieved through mating.

## Types of Breeding

- **In-Breeding**:

This involves mating of more closely related animals than the average of the population from which they come, e.g., the mating of father to daughter, son to mother or brother to sister.

- It produces offspring with undesirable characteristics because of recessive genes showing up.
- It also enables the farmer to get desired character or quality well developed in an animal

**Line-breeding**:

- It is closely related or similar to in-breeding.
- It involves the mating of not too closely related animals, e.g., mating between cousins.
- It is used to consolidate traits for a sire or dam. Most of the high quality commercial characters developed recently have been as a result of line-breeding.

## Cross Breeding:

- This is the mating of proven quality animals from different breeds
- It may lead to an increase in hybrid vigour, e.g., the cross between muturu breed of cattle.
- It results in breeds of animals with higher production capacity than any of the parents
- It brings about greater rate of growth in an offspring.

- It produces individuals that can withstand climatic variation in the environment
- It increases diseases resistance in offspring.
- It also promotes higher yields of eggs, meat and milk in offspring

## Out Breeding

- This is the mating of unrelated individuals animals within the same breed. Out-breeding is the opposite of in-breeding.
- It produces offspring with greater vigour and productivity

## Advantages of Breeding

- The crossing or mating of superior animals from two different breeds produces an offspring that is superior to the average of either parent. This is called hybrid vigour or heterosis (cross breeding).
- Offspring grows more rapidly and is more economical to rear (cross breeding).
- It results in the production of pure breeds or pure lines (in-breeding).

- It helps to concentrate and preserve specific qualities in an animal (In-breeding)
- Off springs produced can withstand variations within the environment (cross-breeding).

## Disadvantages of Breeding

- It may result in in-breeding depression, i.e., a reduction in vigour and performance (in-breeding).
- It can also result in drop in production such as, milk, egg, mat, slow growth rate, loss of fertility (in-breeding).
- It may also result in poor resistance to diseases (in-breeding).

# Terms Used In Animal Improvement

- **Breed**:It is a population of Animals with the same gene composition exhibiting the same character or traits.
- **Character/Traits:** These are heritable attributes which the animal breeders select.Eg Colour,Size,Heighr etc.

- **Chromosomes**:It is a structural unit of the nucleus which carries the gene in a linear order.
- **Chromatin**:It is one of the two threaded like structure formed by the the longitudinal division of chromosomes doing meiotic division.
- **Genes**:They are heritary unit of inheritance responsible for the transmission of traits from parents to offsprings.

# Aims Of Farm Improvement

**The following are the aims of animal improvement:**

- To produce animals with high yielding quality.
- To produce animals with high feed conversion rate.
- To produce animals with high growth rate and early maturity.
- To produce animals that can adapt to varied climatic conditions.
- To produce animals that are resistants to disease and parasites.
- To produce different breeds of animals.

# Evaluation

- Define and explain the terms used in animal improvement
- List the importance of farm animal improvement


Thank you
for watching