

**AAT 31022 Animal Breeding Technology**

# **Livestock Selection and Breeding**

**Department of Biosystems Technology**

**Faculty of Technology**

**SEUSL**

# Selection of Breeding Stock

- Selection is used as a tool for livestock improvement
- A breeding stock is a group of males and females which act as parents of future generations
- Selection is the process of allowing certain animals to be parents of future generations while culling others
- Culling is the removal of animals which do not perform to the desired level, from the herd
- The animals retained have certain desirable characteristics which make them produce more

- Selected animals make up the breeding stock
- The breeding stock should pass the good qualities to their offspring for better performance, to improve the livestock
- Selection process repeated for many generations increases chances of formation of desirable qualities in an animal
- Genetically termed as **gene frequency** (occurrence of the genes that carry desirable characteristics.) Selection increases occurrence of desirable genes and decreases occurrence of undesirable genes

• ***The degree to which selection affects a character depends on the following factors;***

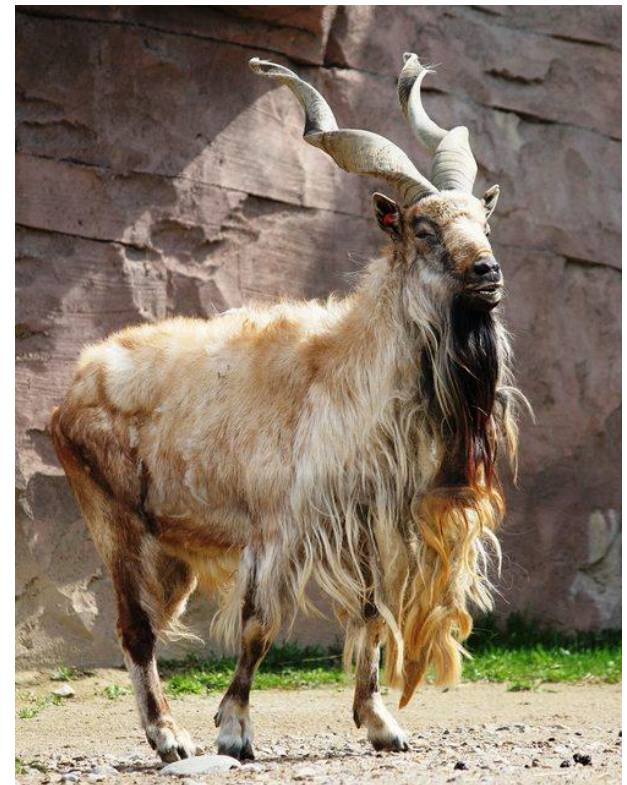
- The heritability of the character
- The intensity with which the selection is done
- The interval between generations and
- Kind of selection being practiced

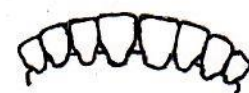
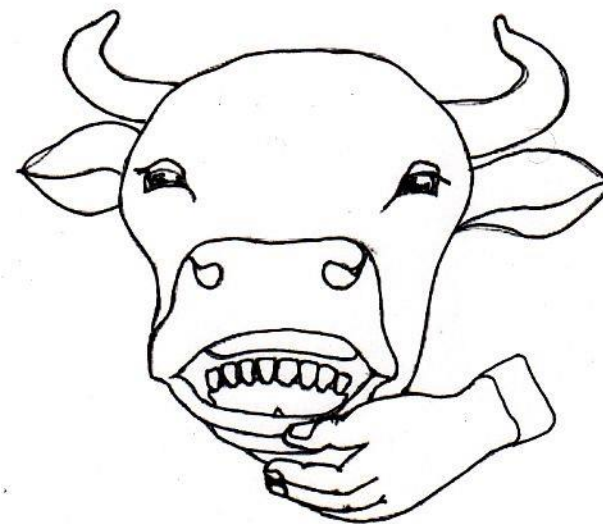
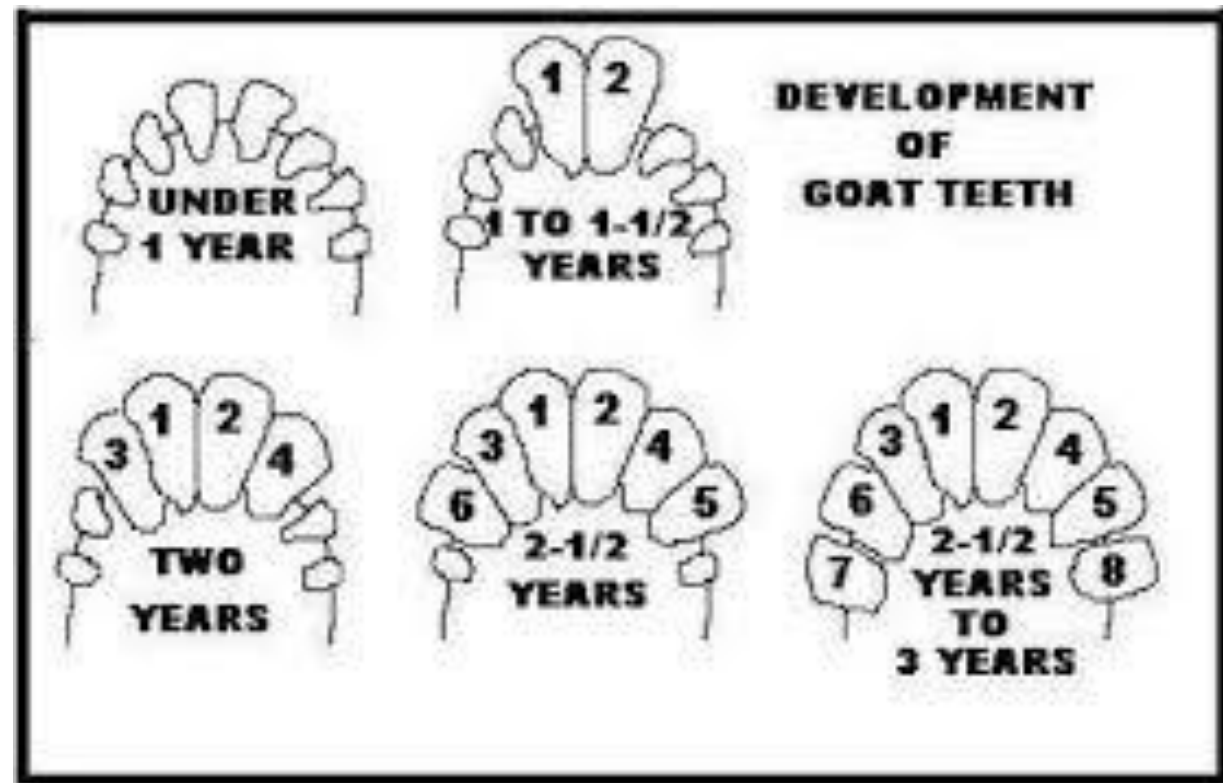
# Factors To Consider When Selecting A Breeding Stock

- Age
- Level of performance
- Physical Fitness
- Health
- Body Conformation
- Temperament or Behaviour
- Quality of products
- Mothering Ability
- Adaptability
- Prolificacy

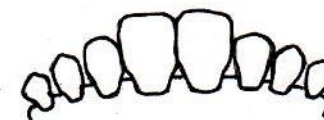
# 1. Age

- Young animals,
- Those that have not parturated for more than 3-times, should be selected
- They have a longer productive life
- Old animals are poor breeders and low producers
- Production and breeding efficiency decline with age

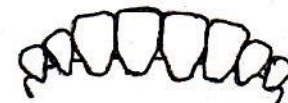




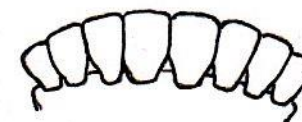
A. baby (milk teeth) Under 2 years old



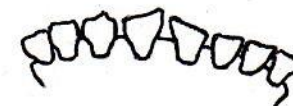
B. 2 tooth: 2 to 2 1/2 years old



C. 4 tooth: 2 1/2 to 3-1/2 years old



D. full mouth: 4 years



E. worn: over 4 years old

## 2. Level of performance

- Animals with highest production level selected.
- Performance best indicated by records
- ***Good performance of animal indicated by;***
  - High milk, wool and egg production
  - Good mothering ability
  - High prepotency which is the ability of a parent to pass good qualities to their offspring
  - The animals with poor performance should be culled.
  - Good records kept and used by the farmer for this purpose



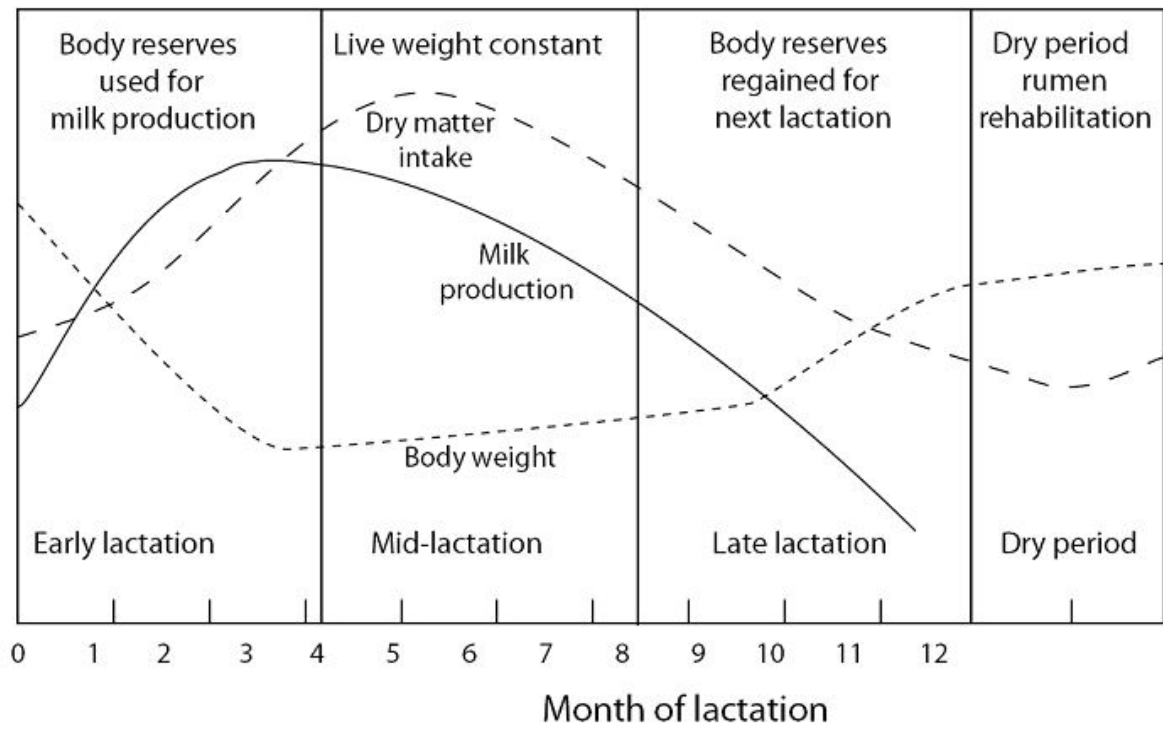
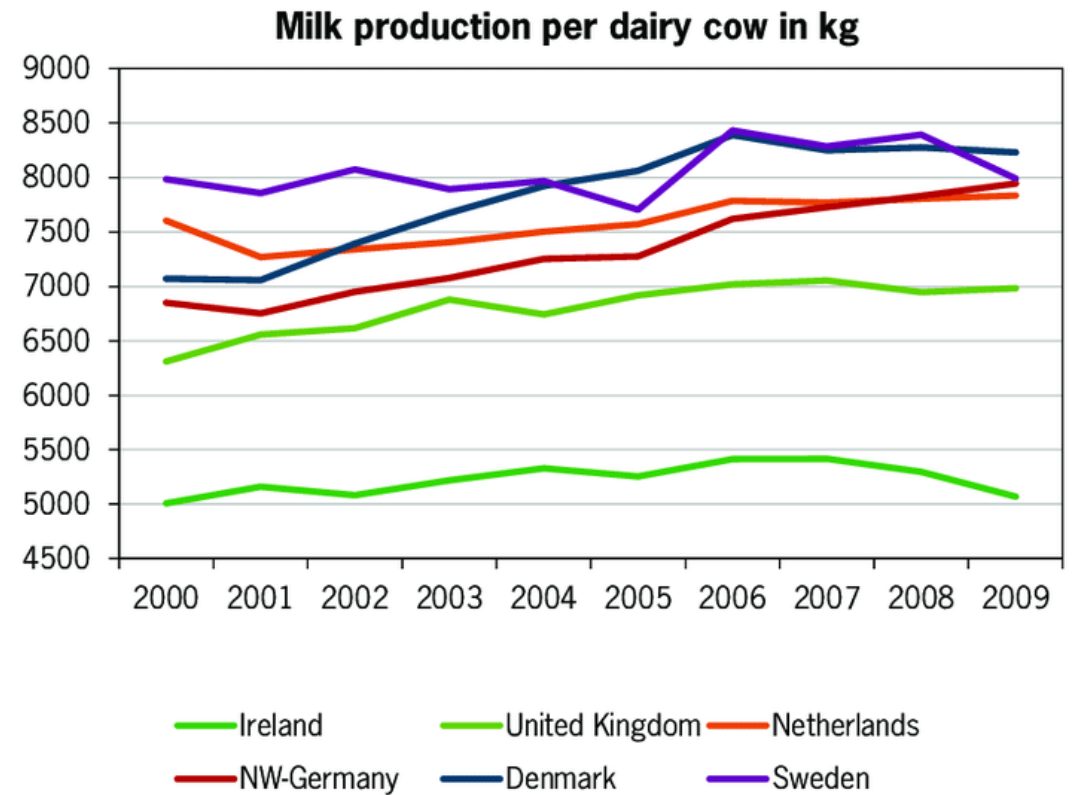


Figure 1. Dry matter intake, milk yield and live weight changes in a cow during her lactation cycle



### 3. Physical Fitness

- Animals selected should be free from any physical defect

e.g.

- mono-eyed
- limping
- irregular number of teats
- scrotal hernia
- defective and weak backline



## 4. Health

- Sick animals do not breed well and are expensive to keep
- Animals that are resistant to diseases pass these characteristics to their offspring

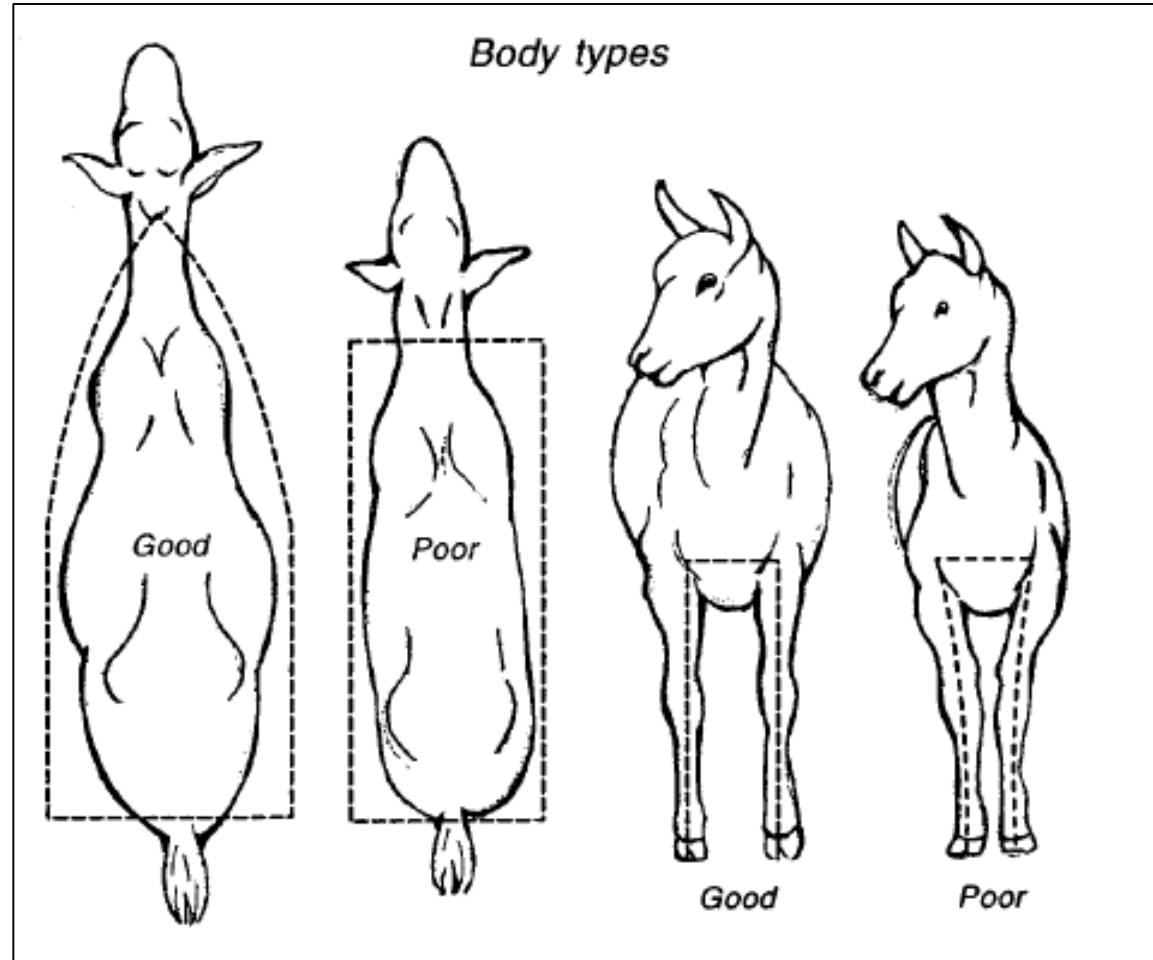


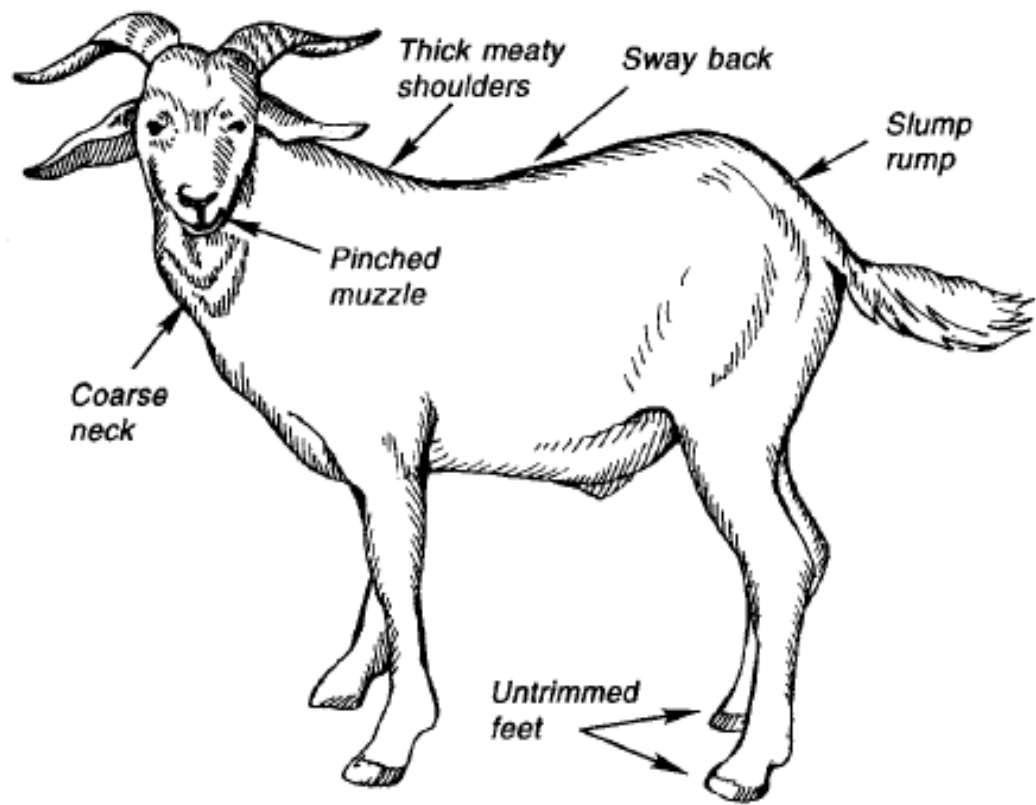


- **5. Body Conformation**

- Animals for breeding to be selected according to proper body conformation
- A dairy cow should be wedge-shaped with a large udder, thin legs, long neck

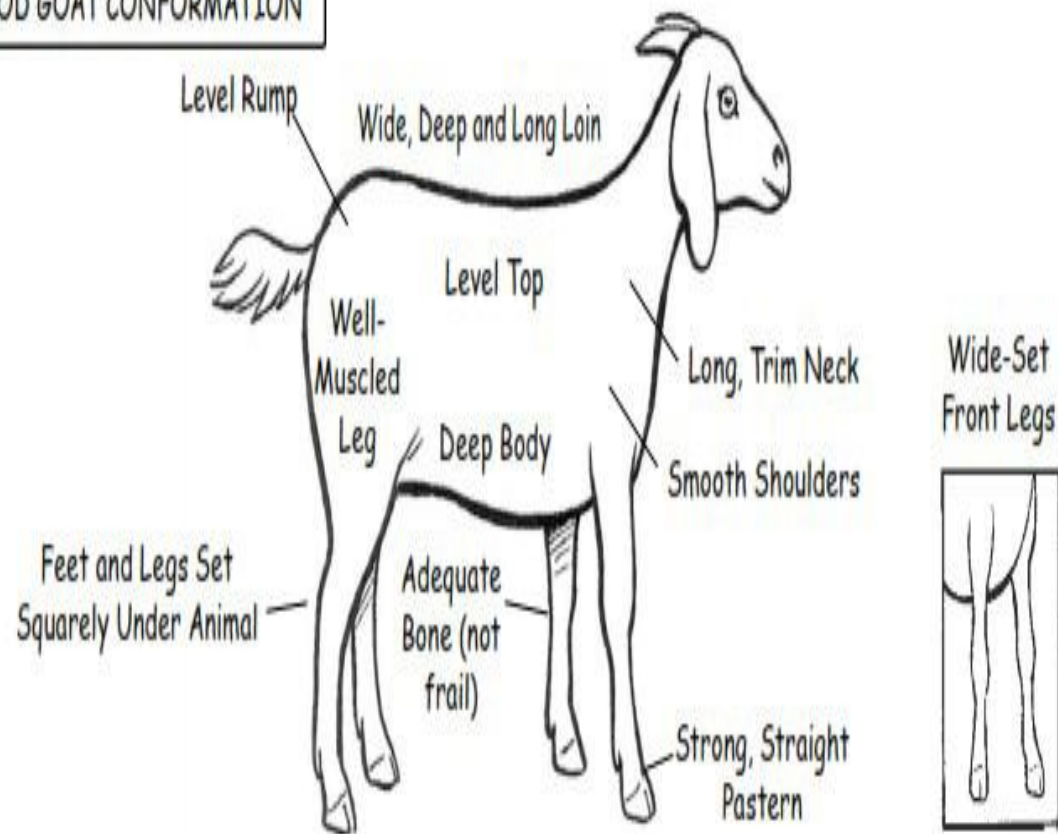
# Body conformation



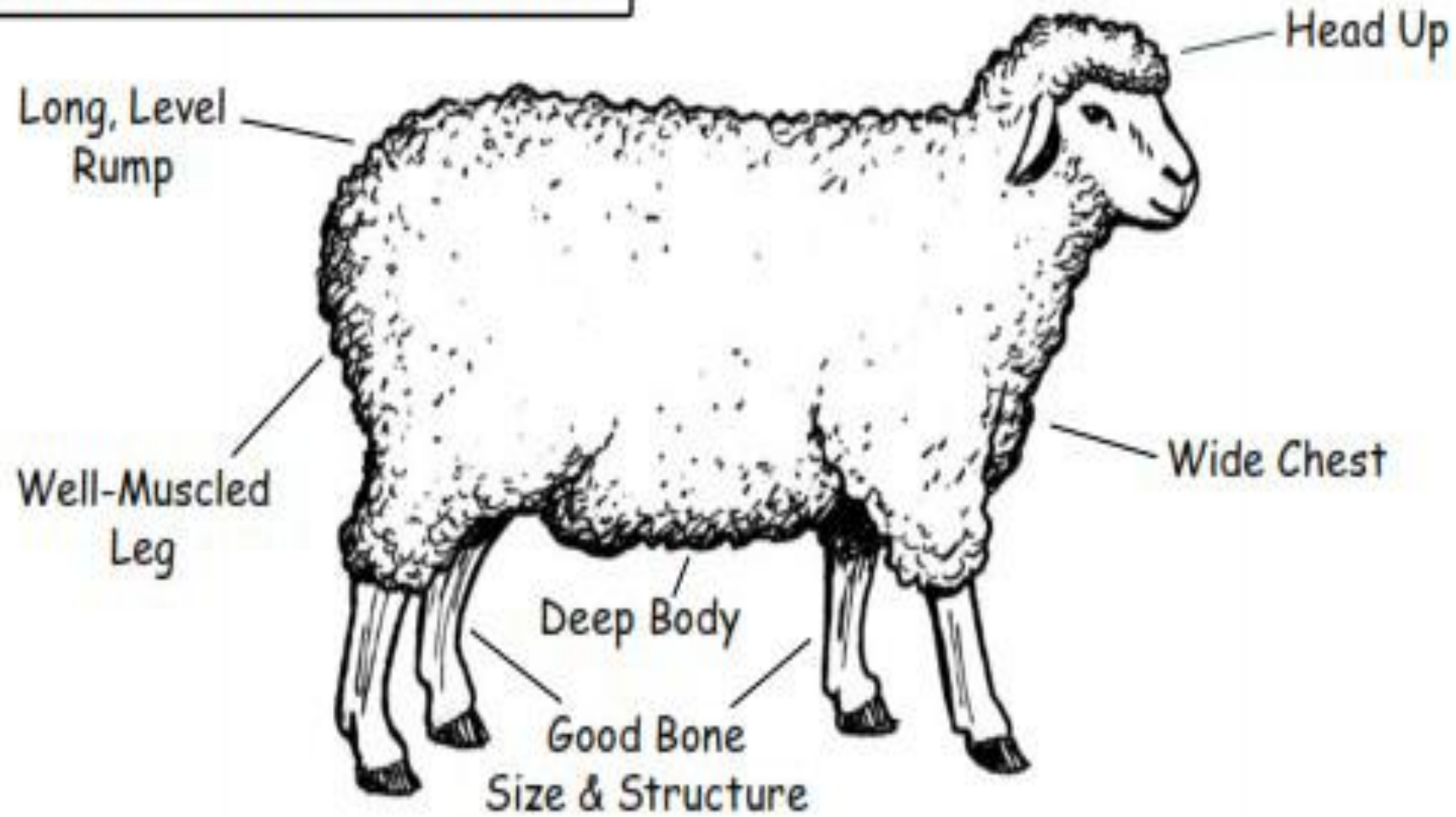


*Poor body conformation.*

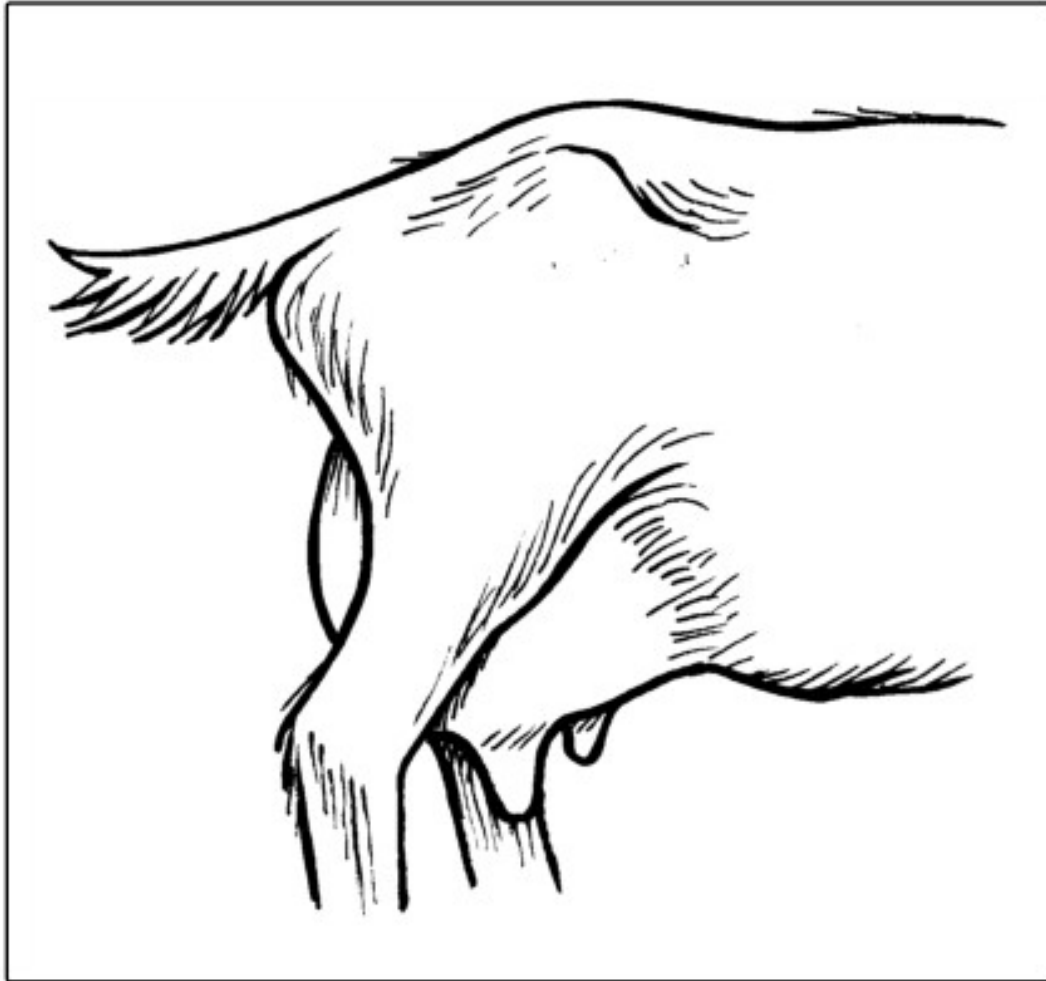
**GOOD GOAT CONFORMATION**



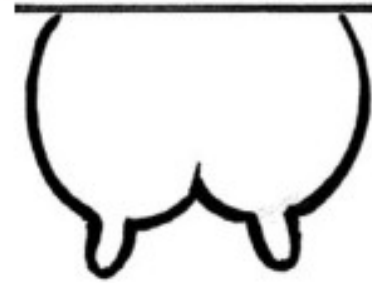
## GOOD SHEEP CONFORMATION



Does and ewes should have a well-balanced udder with two functional teats.

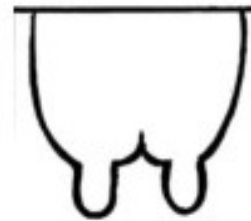


GOOD

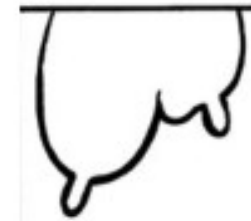


Avoid animals with really small or really large teats. Other udders to avoid:

TOO BULBOUS



ONE-SIDED





## 6. Temperament or Behavior

- Animals with bad behaviors should be culled  
e.g. Cannibalism, egg eating, aggressiveness, kicking



# 7. Quality of products




- Select animals that give products of high quality such as meat, wool, eggs, milk









## PORK QUALITY STANDARDS

Quality of fresh pork varies greatly. The quality levels shown below will appear differently to consumers, taste differently when cooked, and perform differently when converted to processed products. High quality pork has greater monetary value than low quality pork. Quality can be evaluated by simple visual appraisal, or it can be determined more accurately by scientific tests. This chart may be used to help identify variations in pork quality. Color and Marbling Standards cards are also available.








**COLOR - TEXTURE - EXUDATION**

 <b>PSE</b> Pale pinkish gray, very Soft and Exudative. Undesirable appearance and shrinks excessively.	 <b>RFN</b> Reddish pink, Firm and Non-exudative. "IDEAL". Desirable color, firmness and water-holding capacity.	 <b>DFD</b> Dark purplish red, very Firm and Dry. Firm and sticky surface, high water-holding capacity.
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**COLOR STANDARDS**

 <b>1.0</b> Pale pinkish gray to white Minolta L* Value <sup>1</sup> 61	 <b>2.0</b> Grayish pink 55	 <b>3.0</b> Reddish pink 49	 <b>4.0</b> Dark reddish pink 43	 <b>5.0</b> Purplish red 37	 <b>6.0</b> Dark purplish red 31
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**MARBLING STANDARDS<sup>2</sup>**

 <b>1.0</b>	 <b>2.0</b>	 <b>3.0</b>	 <b>4.0</b>	 <b>5.0</b>	 <b>6.0</b>	 <b>10.0</b>
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Color and marbling scores are as described in "Composition & Quality Assessment Procedures", 1995, NPPC.  
<sup>1</sup> Minolta L\* values are D50 daylight light source.  
<sup>2</sup> Marbling scores correspond to intramuscular lipid content.

For more information contact:  
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Des Moines, Iowa 50319-0702  
515.281.4600  
www.nppc.org

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## 8. Mothering Ability

- Animals selected should have a good mothering ability
- That is animals with good natural instinct towards their young ones
- This will enable them to rear the young ones up to weaning



## 9. Adaptability

- Animals selected should be well adapted to the prevailing climatic condition in the area
  - e.g Arid and semi arid areas



- **10. Prolificacy**

- Animals selected should be highly prolific
- That is, animals with the ability to give birth to many offspring at a time (larger litter)
- This is a quality that should be considered when selecting pigs and rabbits
- The ancestry records assist to choose the prolific breeds for mating

A screenshot of a pedigree chart software interface. The interface displays a complex grid of data representing the ancestry of a pig. The grid is organized into columns and rows, with various fields for recording genetic information. A specific row is highlighted in green, and a pop-up window is visible over it, displaying the name "Name: Anita S. Bred". The interface includes navigation buttons like "Back to Record" and "Save", and a page indicator "Page 17 of 18".

# Selection in Cattle

## *Consider the following;*

- Level Of Performance Which Include;
  - Milk Yield Butter Content
  - Length Of Lactation Period
  - Calving Intervals
- Age of the Animal
- Fertility
- Physical Fitness
- Health Of The Animal
- Body Conformation
- Suitability of the enterprise-milk or beef

# Selection in sheep

## *Consider the following;*

- Level of performance which includes;
  - Mothering ability
  - Growth rate
  - Wool quality
  - Carcass quality
  - Twinning rate Age
- Suitability to the enterprise-wool or mutton
- Flocking instinct Health of the animal
- Physical fitness
- Inheritable defects
- Fertility
- Inheritable defects
- Fertility

## ***Selection in Goats***

### ***Consider the following:***

- Fertility
- Mothering ability
- Growth rate
- Twinning rate
- Carcass quality/dressing percentage
- Growth rate
- Suitability to the enterprise - milk or mutton
- Health of the animal
- Age



# Selection in Pigs

## *Consider the following:*

- Carcass quality/dressing percentage
- Suitability to the enterprise (bacon or pork)
- Growth rate
- Health of the animal
- Mothering ability
- Prolificacy
- Number of teats
- Temperament
- Body formation
- Age
- Heredity defects