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
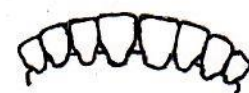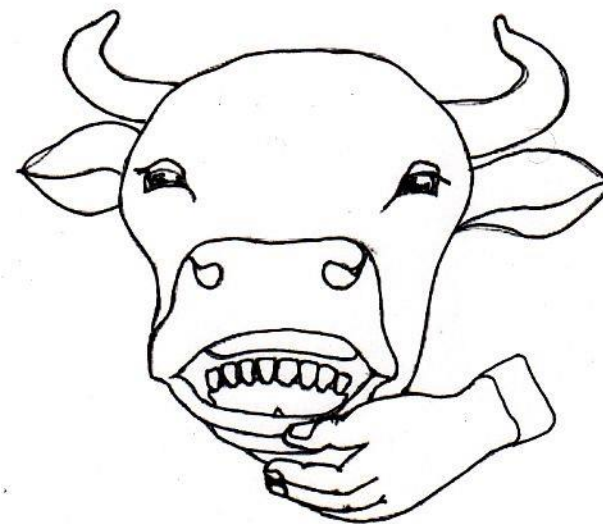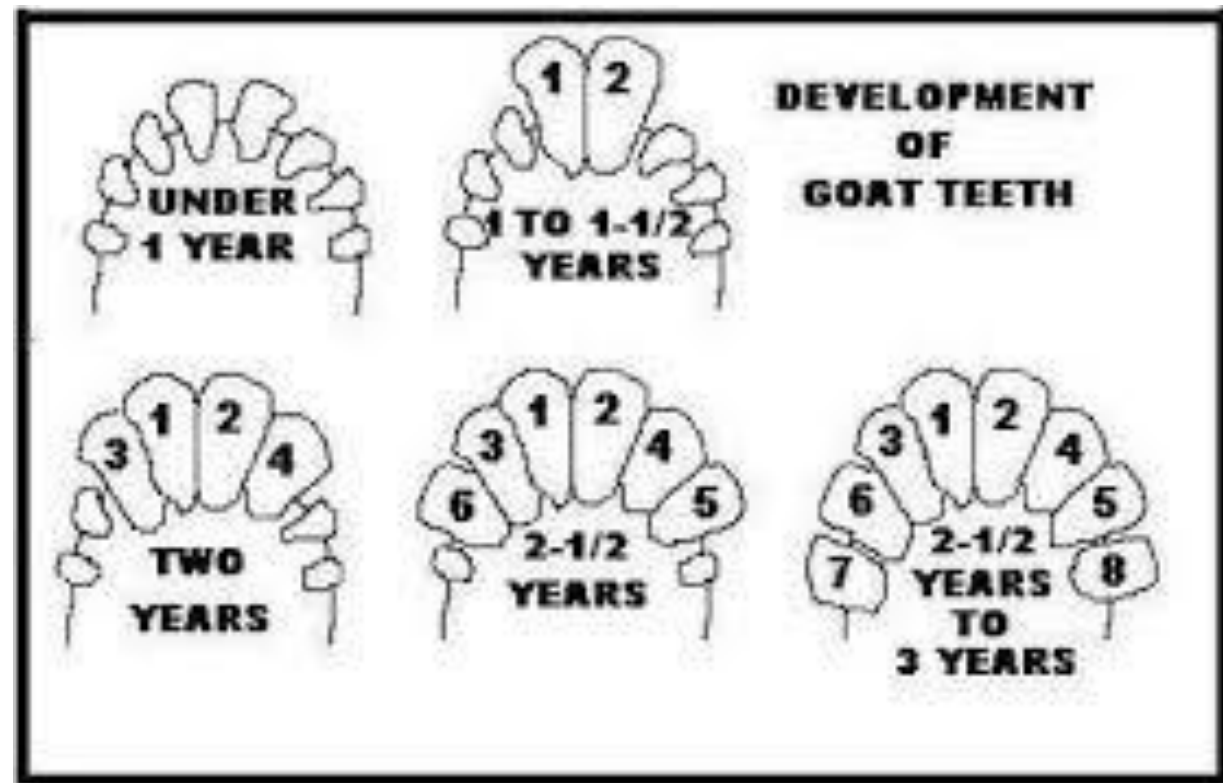 - Kind of selection being practiced

Factors To Consider When Selecting A Breeding Stock

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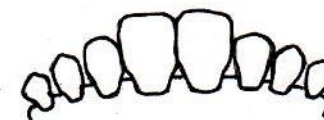- Temperament or Behaviour
- Quality of products
- Mothering Ability
- Adaptability
- Prolificacy

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
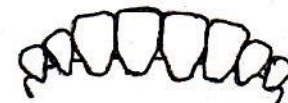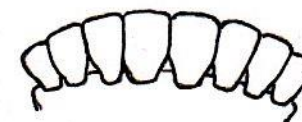- Production and breeding efficiency decline with age
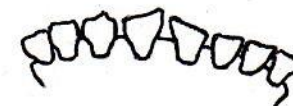
DEVELOPMENT OF GOAT TEETH

UNDER 1 YEAR

1 TO 1-1/2 YEARS

TWO YEARS

2-1/2 YEARS

2-1/2 YEARS TO 3 YEARS
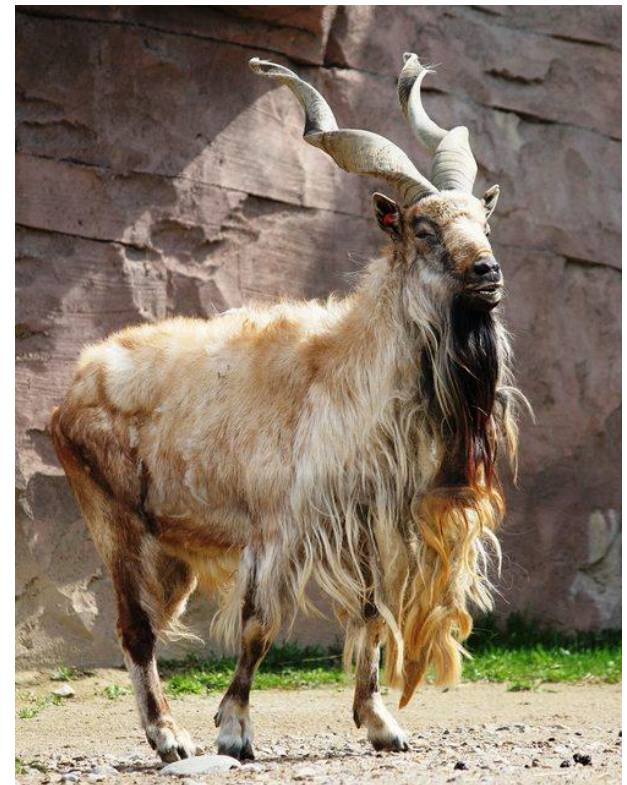
A. baby (milk teeth) Under 2 years old

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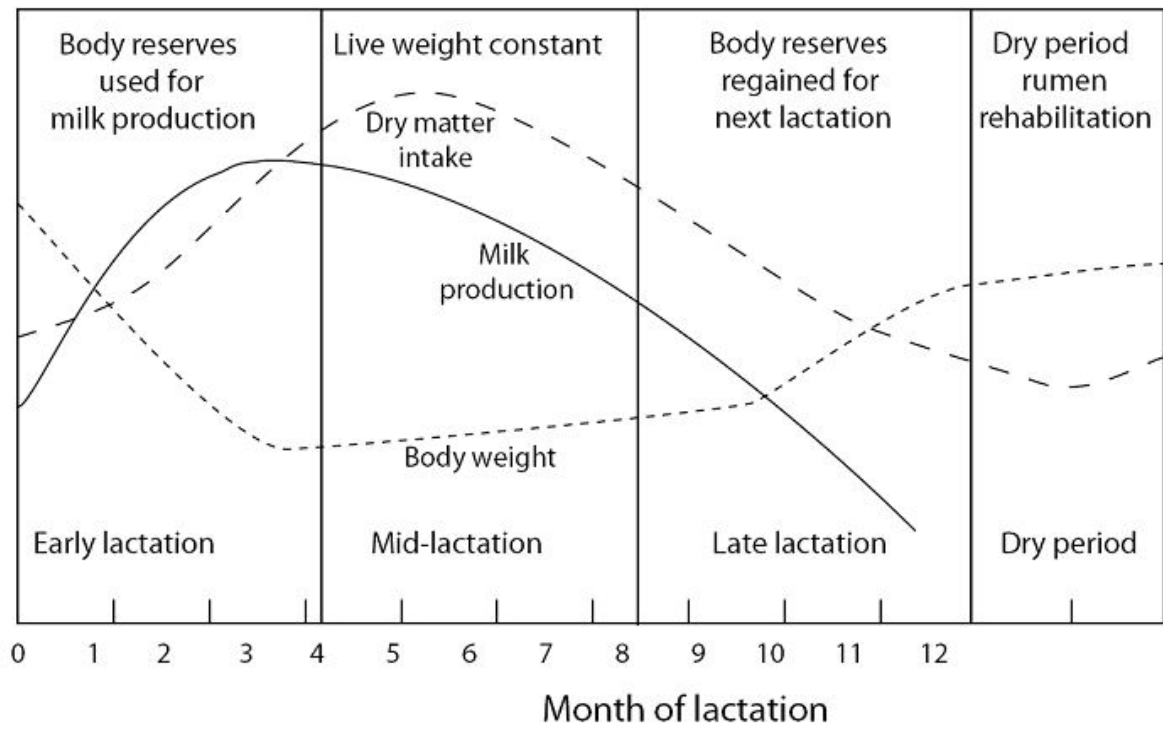
Figure 1. Dry matter intake, milk yield and live weight changes in a cow during her lactation cycle

Milk production per dairy cow in kg

— Ireland   — United Kingdom   — Netherlands
— NW-Germany   — Denmark   — Sweden
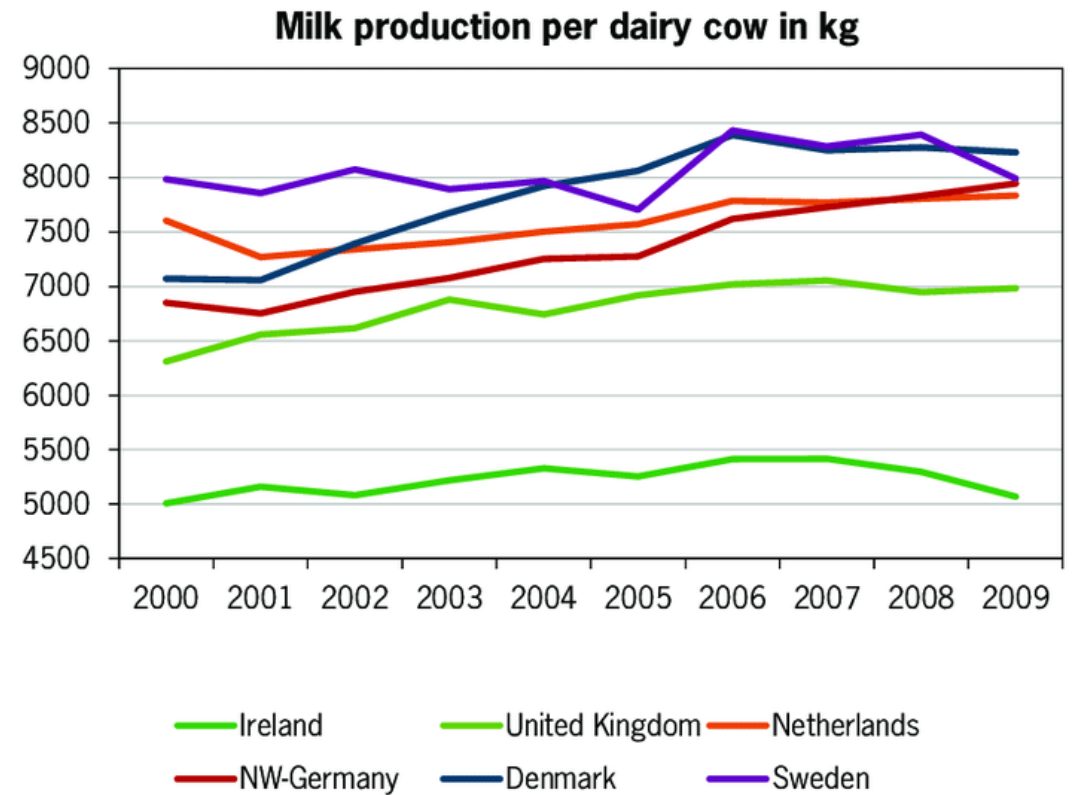
3. Physical Fitness

• 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.

Labels: Thick meaty shoulders, Sway back, Slump rump, Pinched muzzle, Coarse neck, Untrimmed feet

GOOD GOAT CONFORMATION
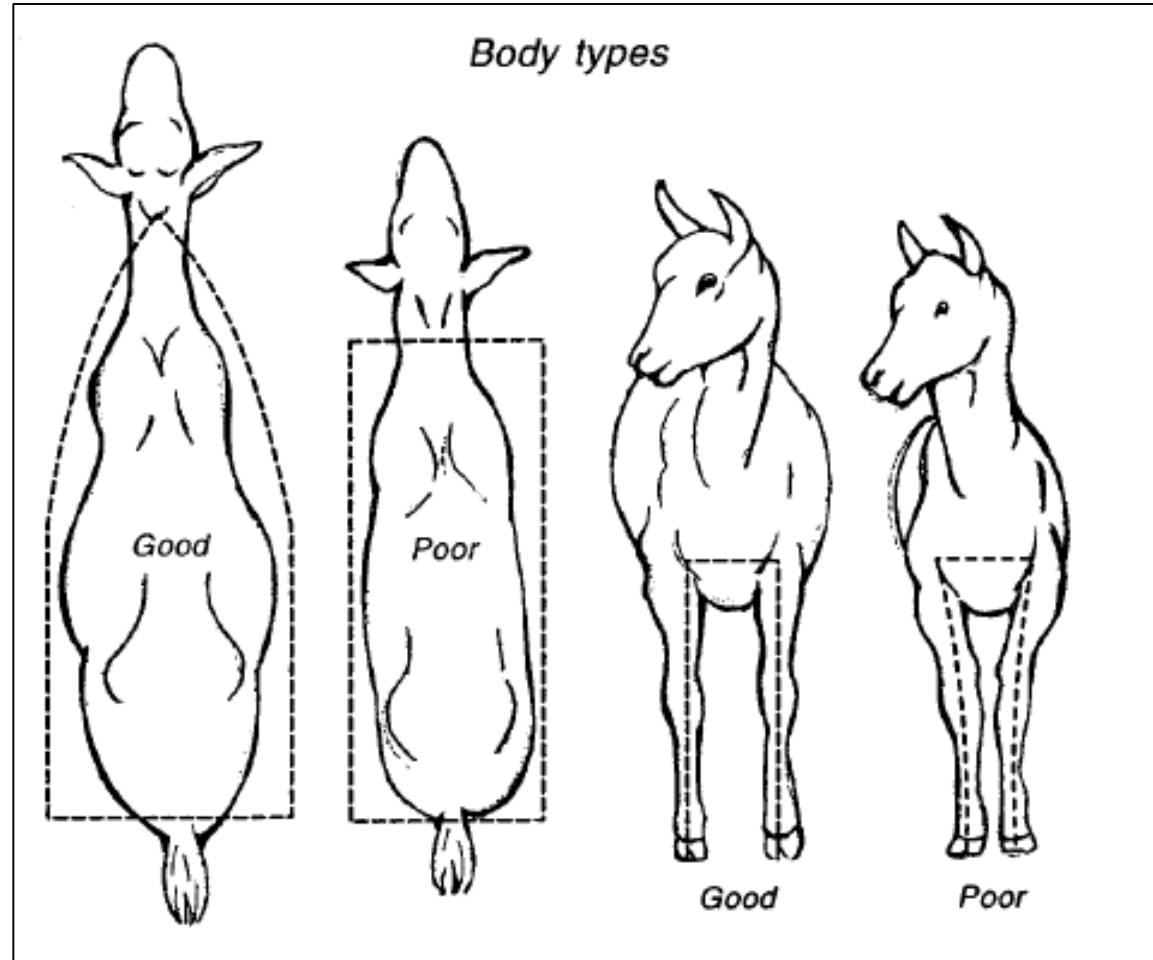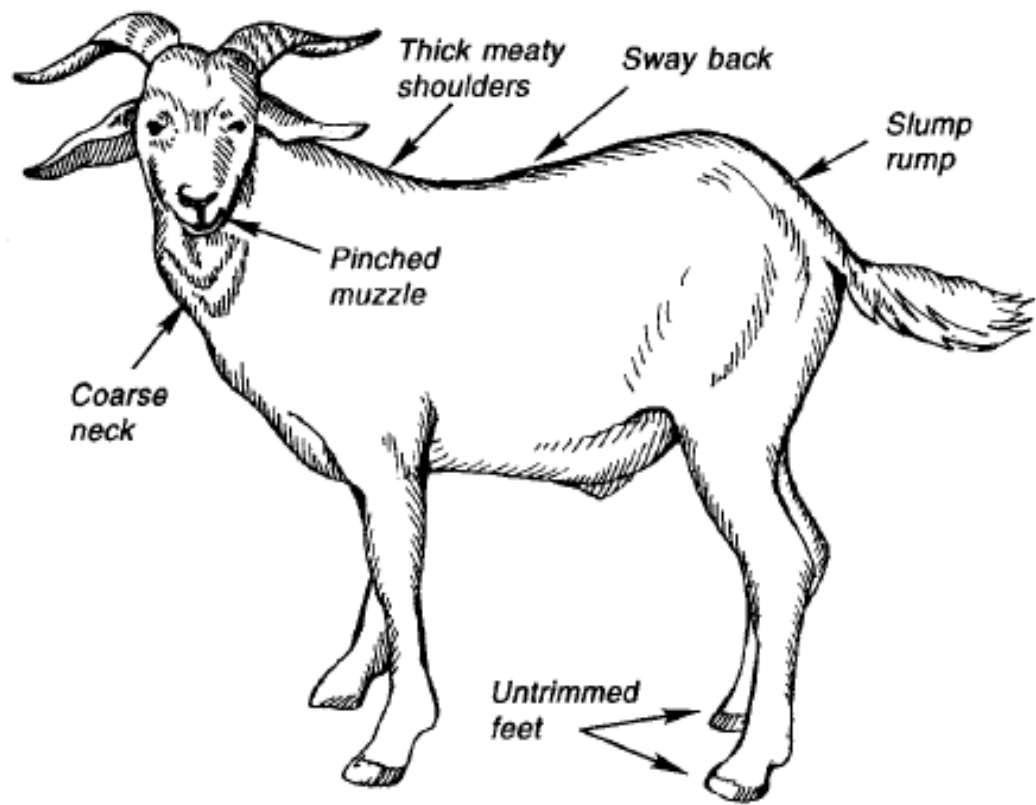
Labels: Level Rump, Wide, Deep and Long Loin, Level Top, Well-Muscled Leg, Long, Trim Neck, Deep Body, Smooth Shoulders, Wide-Set Front Legs, Feet and Legs Set Squarely Under Animal, Adequate Bone (not frail), Strong, Straight Pastern
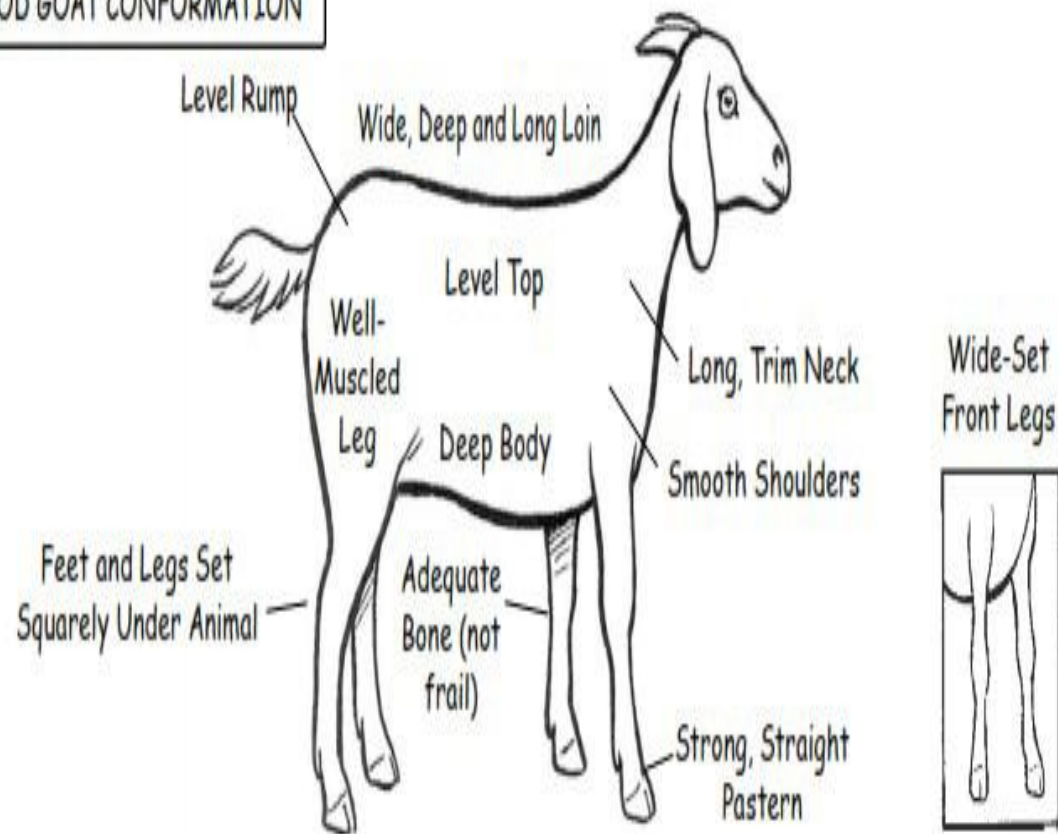
GOOD SHEEP CONFORMATION

Head Up

Long, Level Rump

Wide Chest

Well-Muscled Leg

Deep Body

Good Bone Size & Structure
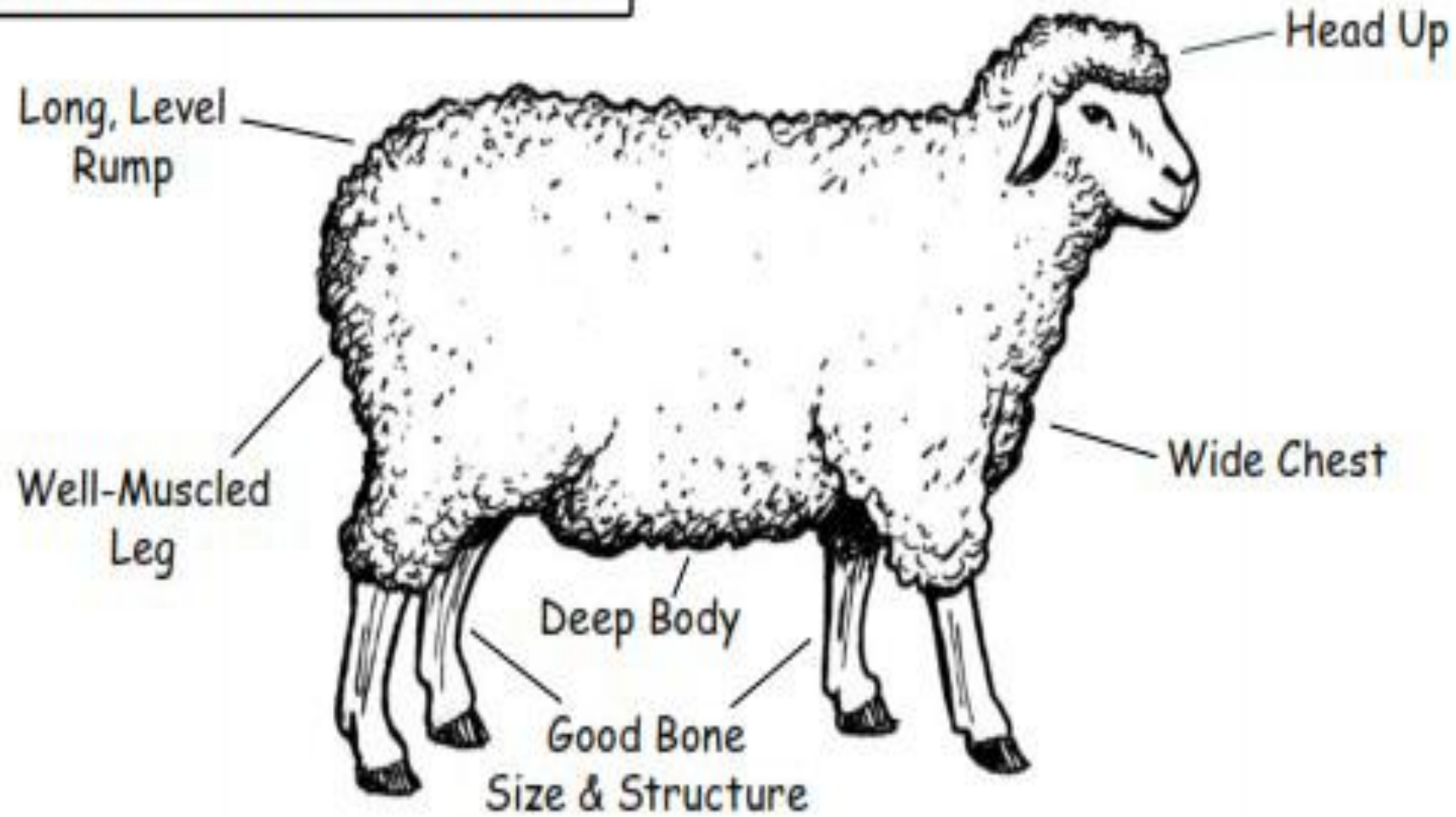
Does and ewes should have a well-balanced udder with two functional teats.
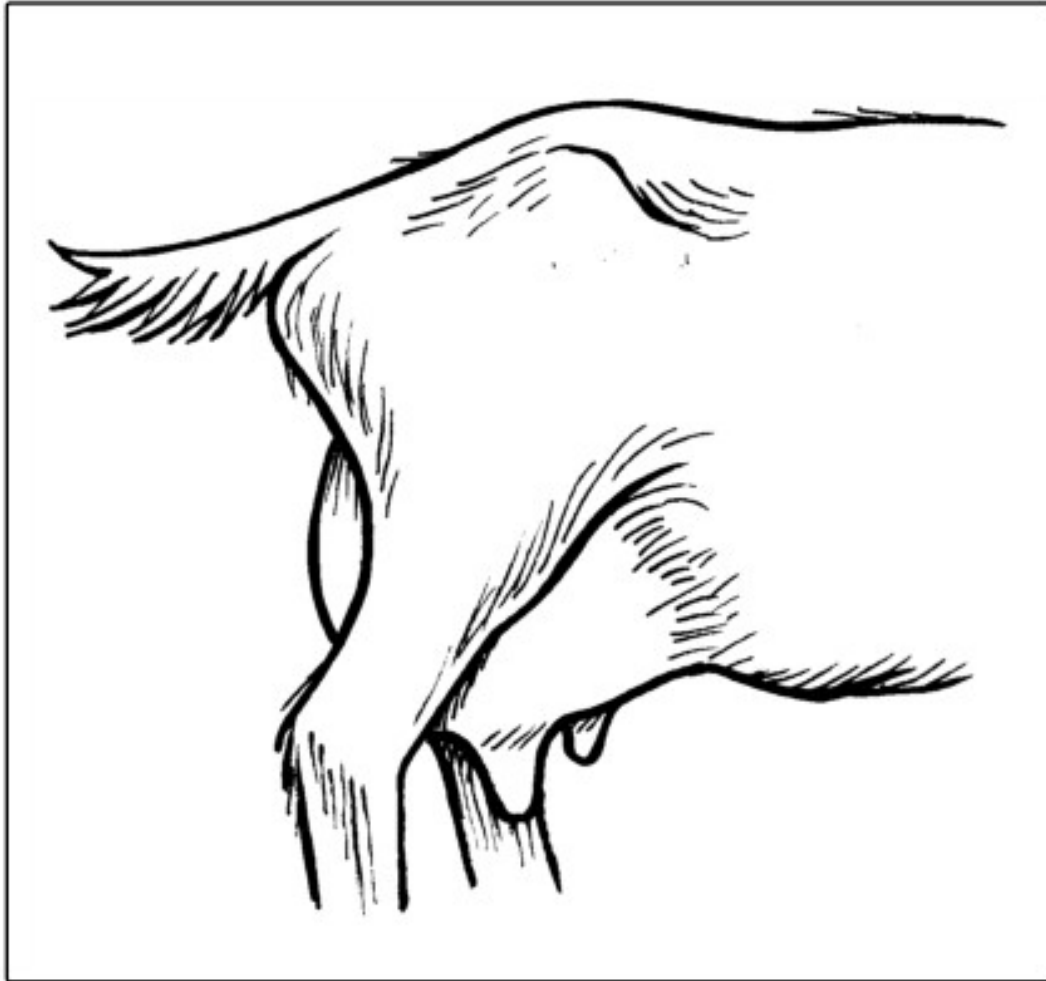
GOOD
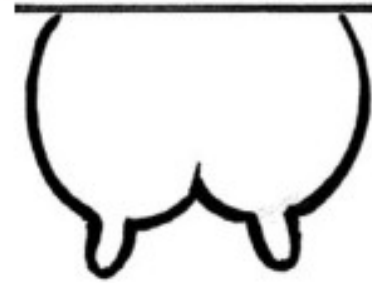
Avoid animals with really small or really large teats. Other udders to avoid:

TOO BULBOUS
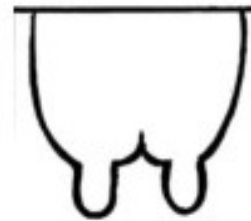
ONE-SIDED
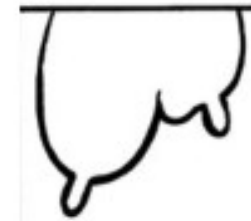
6. Temperament or Behavior

- 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

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

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
    - Twining 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

- Twining 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