

ANIMAL GENETICS & BREEDING

UNIT - III The Principles of Animal Breeding Theory

ECONOMIC TRAITS

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ECONOMIC TRAITS OF SHEEP

- **Age at first lambing** : Age of a ewe in days at the time of first lambing.
- **Tupping percentage** : Number of ewes mated to the number of ewes put to ram.
- **Lambing percentage** : Number of ewes lambbed to the number of ewes put to ram.
- **Weaning percentage** : Number of lambs weaned to the number of ewes put to ram.
- **Twinning percentage** : Number of twin births to the total number of births (total number of ewes lambbed).

- **Lambing interval:** Number of days from the date of one lambing to the date of next lambing.
- **Birth weight :** Weight of a lamb in kg at birth (weighed within 24 hours).
- **Weaning weight :** Weight of a lamb in kg at 90 days of age (weaning).
- **Weight at market age :** Weight of a lamb in kg at the market age of 180, 270 or 365 days. Usually for Indian sheep, 9th month weight is called as market weight.

- **Growth rate**

- Pre-weaning growth rate : Daily weight gain in grams from the date of birth to date of weaning.

- (Weaning weight (90th day) – Birth weight) / 90**

- Post-weaning growth rate : Daily weight gain in grams from the date weaning to date of marketing

- (Weight at market (180, 270 or 365 days) – Weaning weight / Age at market (180, 270 or 365 days) – 90)**

- **Mortality percentage**

- Pre-weaning mortality : Number of lambs died from birth to 90th day (weaning) to the number of lambs born alive.
- Post-weaning mortality : Number of lambs died from weaning to 365 days to the total number of lambs weaned.
- Adult mortality : Number of adult sheep died during the year to the number at the beginning of the year.

Wool traits

- Greasy fleece yield :- weight of greasy wool removed from the sheep by shearing.
- Clean fleece weight:- weight of clean wool removed from the sheep by shearing.
- Staple length:- the length of a staple projected along its axis obtained by measuring the staple without stretching or disturbing the crimp of the fibres.

- Crimp frequency:- The number of crimp waves per centimetre of staple length.
- Fleece density:- the total amount of wool fibre growing on a definite unit area of skin, usually on the living animal.
- Medullation percentage:- Fibres that are medullated contain internal cells which are air-filled.

ECONOMIC TRAITS OF GOAT

- Age at first kidding : Age of a doe in days at the time of first kidding.
- Lactation length: Number of days in milk from the date of kidding to the date of cessation of milk production.
- Lactation milk yield : Milk yield in kg from the date of kidding to the date of cessation of milk production.

- 150-day lactation milk yield : Milk yield in kg from the date of kidding to 150th day of lactation. If the lactation length is less than 150 days, it is taken as 150 days milk yield.
- Kidding interval: Number of days from the date of one kidding to the date of next kidding.
- Incidence of multiple birth : Number of multiple births (twins, triplets, quadruplets *etc.*) to the total number of births (total number of does kidded).

- Birth weight : Weight of a kid in kg at birth (weighed within 24 hours).
- Weaning weight : Weight of a kid in kg at 90 days of age (weaning).
- Weight at market age : Weight of a kid in kg at the market age of 180, 270 or 365 days. Usually for Indian goats, 9th month weight is called as market weight.

- Growth rate
 - Pre-weaning growth rate : Daily weight gain in grams from the date of birth to date of weaning.
- **(Weaning weight (90th day) – Birth weight)/90**
 - Post-weaning growth rate : Daily weight gain in grams from the date of weaning to date of marketing
- **Weight at market (180, 270 or 365 days) – Weaning weight / Age at market (180, 270 or 365 days) – 90**

- Mortality percentage

- Pre-weaning mortality : Number of kids died from birth to 90th day (weaning) to the number of kids born alive.
- Post-weaning mortality : Number of kids died from weaning to 365 days to the total number of kids weaned.
- Adult mortality : Number of adult goats died during the year to the number at the beginning of the year.

ECONOMIC TRAITS OF SWINE

- **Litter size at birth** : Number of piglets born in a litter.
- **Litter size born alive** : Number of piglets born alive in a litter.
- **Litter size at weaning** : Number of piglets weaned per litter at 56th day.
- **Birth weight** : Weight of a piglet in kg at birth.

- **Litter weight at birth** : Weight of all piglets of a litter in kg at birth.
- **Weaning weight** : Weight of a piglet in kg at 56 days of age (weaning).
- **Litter weight at weaning** : Weight of all piglets of a litter in kg at weaning.
- **Weight at market age** : Weight of a piglet in kg at the market age of 154 or 210 days.

- **Growth rate**
 - **Pre-weaning growth rate** : Daily weight gain in kg from the date of birth to date of weaning.
- **(Weaning weight (56th day) – Birth weight) / 56**
 - **Post-weaning growth rate** : Daily weight gain in kg from the date of weaning to date of marketing
- **(Weight at market (154 or 210 days) – Weaning weight) / (Age at market (154 or 210 days) – 56)**

- **Mortality percentage**

- **Pre-weaning mortality** : Number of piglets died from birth to 56th day (weaning) to the total number of piglets born alive.
- **Post-weaning mortality** : Number of piglets died from weaning to 154 or 210 days to the total number of piglets weaned.
- **Adult mortality** : Number of adult pigs died during the year to the number at the beginning of the year.

Economic traits in rabbits

- **Litter size at birth:-**
- **Litter weight at 21-day age (three weeks):-** The litter weight at three weeks age is taken as criteria for measurement of mothering ability of the doe. The optimum value for litter weight at 21 days age is 1.2 - 1.5 kg.
- **Weaning weight of litter:-** The young bunnies are weaned between 30 days and 45 days. At the time of weaning the body weight of bunnies should be more than 450 gm. Litter weight at weaning must be more than 3 kg.

- **Litter size at weaning :-** Atleast 5-6 bunnies should be available from each litter at the time of weaning. More number of weaned bunnies are always advantageous for the farmer.
- **Feed conversion efficiency:-** It is practically impossible to record daily the feed given to each and every rabbit. Hence the number of days taken to attain 2 kg body weight is taken as a yardstick for feed conversion efficiency. Animals who attain 2 kg body weight at lower age are assumed to be better converters of feed and are selected as breeding animal.

THANK YOU