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MINISTRY OF AGRICULTURE, LIVESTOCK AND  
FISHERIES STATE DEPARTMENT OF LIVESTOCK

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# Dairy Breeds and Breeding

A manual for smallholder for dairy farmers  
and extension workers in Kenya

# **Dairy Breeds and Breeding:**

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A manual for smallholder dairy farmers  
and extension workers in Kenya

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# 1. Dairy Breeds

## 1.1 Introduction

A dairy cow is one that is kept for milk production. It has the potential of turning feeds into milk as opposed to beef breed which has ability of turning feed into meat.

The most common dairy breeds reared in Kenya are as below:



### 1.1.1 Friesian

- Black and white (some Holsteins have red and white)
- Big in frame
- Milk production 20-30 kg per day (when well bred and fed)
- Butter fat content 3.2 – 3.8%
- Susceptible to most tropical diseases and low heat/stress tolerance
- Will only perform optimal in high potential areas.
- Attains maturity at 12 – 15 months.



### 1.1.2 Ayrshire

- Brown/Red/Mahogany and white.
- Medium frame.
- Milk production 20-25 kg per day (well-bred and fed).
- Better fat content 3.6 – 4.5%.
- Has strong feet and legs, well developed strongly attached udder.
- Long lasting (longevity breed).
- Fairly resistant to tropical diseases.
- Will perform well in medium potential areas under medium or low management practices.
- Attains maturity at 15 – 18 months.





### 1.1.3 Guernsey

- Brown and white
- Medium framed
- Milk production 10-20 kg per day (well-bred and fed)
- Fairly resistant to tropical diseases
- Butter fat content 4.0 – 4.8%
- Fairly drought resistant
- Very low numbers in Kenya and World (a dying breed)
- Attains maturity at 18 – 22 months



### 1.1.4 Jersey

- Grey and dark
- Small framed
- Milk production 10-20 kg per day
- Well developed strongly attached udders
- Fairly strong resistance to tropical disease and draught resistant
- Butter fat content 4.5 – 6.0%
- Milk used for making butter and cheese
- Attains maturity at 18 – 22 months. Friesian
- Black and white
- Big in frame
- Milk production 20-30 kg per day (well-bred and fed)
- Butter fat content 3.2 – 3.8%
- Susceptible to most tropical diseases and low heat/stress tolerance
- Will only perform optimal in high potential areas.
- Attains maturity at 12 – 15 months.





## 2.2 Bulls and bull calves:

Always keep your bull's role in the herd in mind when picking bulls and bull calves for your cattle breeding herd.



### Bull and bull calf appearance:

- Wide, strong shoulders, heavy, short neck, coarse head, and a muscular rump to provide power during competitive battles with other rivals during the cattle breeding season.
- Proportioned, balanced build - but slightly front-heavy (within reason) for battle with other bulls (see previous point...).
- Masculine appearance.
- Big gut for big competitive foraging capacity.
- Big mouth for maximum grazing intake per mouthful and maximum competitiveness within the grazing herd.
- A scrotum that is well-formed, equally-sized, balanced (no twist), buckskin color, and covered with only very fine, sparse hair so it doesn't overheat the sperm.
- Scrotum should be a minimum of 36 cm (14.17 inches) in diameter by the time the calf reaches 12 months of age.
- NO enlarged teats - enlarged teats on a bull are a sign of a hormone imbalance!
- Good, obvious muscle definition - lack of muscle definition is a sign of low testosterone and consequently lower beef cattle fertility.
- Calm temperament - not wild-eyed, skittish, flighty, or overly aggressive and looking for a fight.
- Big nostrils and wide muzzle for easy breathing.
- Shiny hair indicates healthy secretion of oils that help resist parasites and indicate good health.
- Coarser, curlier, darker hair around the head, neck and lower part of his body (a sign of high male hormones).
- Healthy appearance (hair not shedding out completely in the spring is a clue to poor health even if other less obvious signs are not visible).

## 2.3 Culling

Culling is the removal from the herd an animal with undesired characteristics.

### 2.3.1 Factors to be considered in culling:

1. Persistent low production:-
  - short lactation period coupled with very low milk yield
2. Age:-
  - Old and unproductive animals
3. Udder conformation:-
  - Pendulous,
  - Shrunken,
  - Deformed and or with very tiny teats
  - Disease-prone teats or udder
4. Fertility: -
  - Difficult calvers,
  - Infertile cows,
  - Long calving intervals
5. Body conformation:
  - Weak/poor rear and front feet
  - Not conforming to the wedge-shape i.e. poor angularity in case of dairy cows.

## 3.0. Breeding Systems In Dairy Cattle

Breeding is the selective crossing of the male and the female gametes to get the off-springs of the desired characteristics.

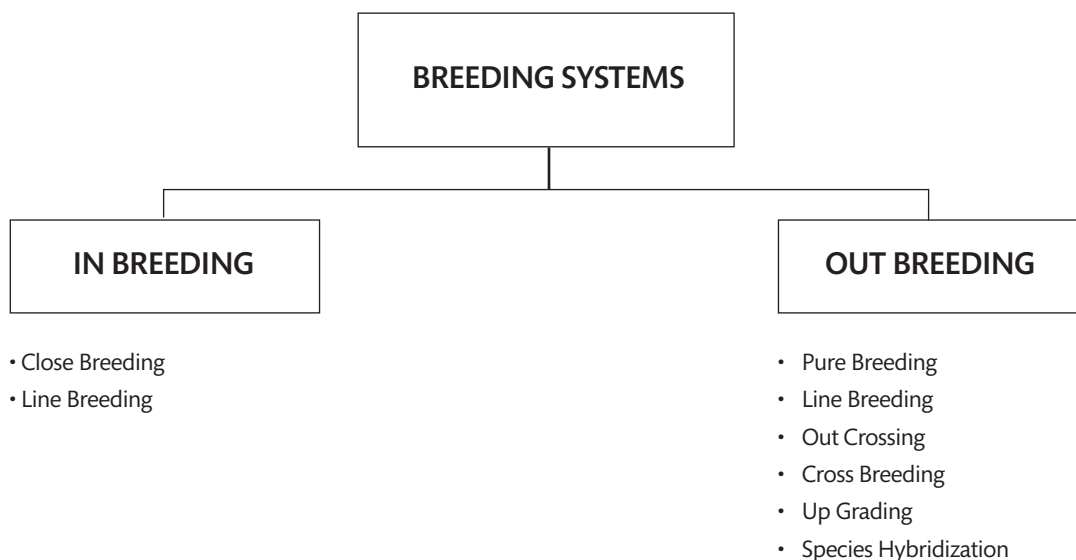
### 3.1 Breeding Objectives

- **Production traits** -Milk Volumes  
- Solids in milk (Butter Fat, Protein)
- **Type traits** -Udder structure  
-Feet and legs  
-Stature  
-Dairy character
- **Fertility traits** -Number of inseminations per conception  
-Calving interval
- **Longevity traits** -Number of normal calvings  
-Lifetime milk production
- **Health traits** -Somatic cell count  
-Disease resistance
- **Calving ease traits** -Pelvic diameter  
-Body frame  
-Slope from pin to hip bone
- **Workability** -Milking speed (depends on teat size, teat shape, teat opening)  
-Temperament  
-Likeability

### 3.2 Breeding Systems

- 1) In Breeding
- 2) Out Breeding

These are further classified as given in the chart below:





## 3.2.1 In-Breeding

Inbreeding is the mating of closely related individuals, whose relationship is more than the average relationship of the population. The example is mating the individuals having one or more common ancestors or relatives. Inbreeding may be close inbreeding or line breeding.

### 3.2.1.1 Classes of in-breeding

#### Close in-breeding:

In close inbreeding, mating is made between very closely related individuals, such as full brothers are crossed with full sisters, or off springs are crossed with parents.

#### Line breeding

This is a repeated back crossing to one outstanding ancestor, so that its contribution to the progeny is more. In this type of breeding, matings are made to concentrate the inheritance of desired characters of some favoured individuals.

- a) It brings about the uniformity of the required type.
- b) The dangers involved in case in breeding can be reduced.

### 3.2.1.2 Advantages of In-breeding:

- a. Undesirable recessive genes may be discovered and eliminated by further testing in this line.
- b. It increases homozygosity and decreases genetic variance.
- c. Breaking down of population into different inbreed lines.

#### Disadvantages of Inbreeding:

- a. The progeny becomes more susceptible to diseases.
- b. Breeding problems and reproductive failure usually increases.
- c. It is difficult to find out the stage of breeding at which it should be discontinued, in order to avoid the bad effects of the system.
- d. It depresses vitality in early life than in later life.

## 3.2.2 Outbreeding:

This is the mating of unrelated animals. It is divided into six classes as detailed below:

- a) Pure breeding
- b) Line Crossing (Crossing of inbreed lines)
- c) Out Crossing
- d) Cross Breeding
- e) Upgrading
- f) Species Hybridization

### 3.2.2.1 Classes of Outbreeding

#### Pure breeding:

It is mating of male and female belonging to the same breed.

Pure breeding is a sort of out breeding. The examples of pure breeding are:

- Friesian Cow x Friesian bull
- Jersey Cow x Jersey bull

The outstanding advantage of pure breeding is for production of bulls for breeding purpose only. It avoids mating of closely related individuals.

## Line crossing:

In this method of breeding, closely inbred lines by intensive in breeding of more than 5 generations is done to develop in bred lines, from unrelated line for the male and for the female. The unrelated inbred line male is mated to the inbred lines of female and the offspring born out of such mating becomes a hybrid which exhibits heterosis or hybrid vigour. Heterosis is the improved or increased function of any biological quality in a hybrid offspring.

## Out crossing:

It is mating of unrelated pure bred animals in the same breed. The animals do not have common ancestors on either side of their pedigree up to 4 to 6 generations and the offsprings of such a mating is known as the out cross.

**Advantage:** It is an effective system for genetic improvement if carefully combined with selection. It is also pure breeding.

## Cross breeding:

It is mating of animals of different breeds. Cross breeding is followed for breeding animals for milk production and meat production. In India zebu breeds of cows and nondescript cows are crossed with Pedigree breeds like Holstein Friesian, Brown Swiss and Jersey bulls or their semen, to enhance the milk production potential of the progeny.

## Advantages of cross breeding:

- The desirable characters of the Pedigree parent are transmitted to the progeny which the indigenous parent does not have.
- In India Cross-breeding and cows is done by using the Pedigree bulls and the progeny inherit the desirable characters of the parent like high milk yield early maturity, higher birth weight of calves, better growth rates, better reproductive efficiency and indigenous parents characters like, heat tolerance, disease resistance ability to thrive on scanty feeding and coarse fodder etc.
- In pairs the way to evolve new breeds with desirable characters.
- Hybrid vigour is made use of in the progeny
- Results are seen more quickly in characters like milk yield in the cross bred progeny.

## Disadvantages of cross breeding:

- The breeding merit of cross breed animals may be slightly reduced.
- Cross breeding requires maintenance of two or more pure breeds in order to product the cross breeds.

## Upgrading:

Upgrading is the practice of breeding in which the sires of the Pedigree breed are mated with the non-descript females and their off-spring from generation to generation. This refers to an ordered system through which the genetic quality of a livestock population is improved through a procedure of consistent use of quality sires such that the progenies move to a higher class in each successive generation until a standard requisite for pedigree status is achieved. Five or six generations of upgrading gives a population resembling the pedigree breeds. After 5 to 6 generations the grades carry 96.9 % to 98.4 % of pedigree inheritance respectively.

## Advantages of Upgrading

- After 5 to 6 generations grades resembling pure bred animals in matter of physical appearance and production can be obtained.
- Upgrading avoids huge expenditure of purchasing the Pedigree females herd of animals as Upgrading is carried on with a few Pedigree bulls and the indigenous female animals.
- It proves the breeding merit of the Pedigree bulls used.
- The value of the upgraded animals is much enhanced.

## Disadvantages of Upgrading:

- The graded males are useless for breeding purpose
- The climate and the environment that is suitable for the Pedigree breed only is suitable for grading also. If the place is not suitable for the Pedigree breed it is not suitable for grading with that breed.

## 4.0 Breeding Methods

### What is breeding?

It is the improvement or development of breeds of livestock by selective mating or fertilization. Breeding methods are ways in which male and female gametes are brought together for possible fertilization.

The main breeding methods are:

1. Natural mating
2. Artificial Insemination

### 4.1 Natural Mating

This is where a cow is taken to a bull to be served by the bull.

#### 4.1.1 Advantages of Natural Mating

- a. Conception rate is high as the cow can be served more than once.
- b. Saves on labour/Less tedious
- c. The farmer does not require any specialized skills
- d. No structures are required
- e. Where a farmer does not own a bull, the cost is lower than A.I

#### 4.1.2 Disadvantages of Natural Mating

- a. It is expensive to raise and maintain a bull.
- b. It promotes inbreeding
- c. Infected bulls can spread breeding diseases to cows.
- d. When large bulls are used, they can hurt small cows.
- e. A lot of semen is wasted.

### 4.2 Artificial Insemination (A.I)

Artificial insemination is the technique in which semen with living sperms is collected from the male and introduced into female reproductive tract at proper time with the help of instruments.

#### 4.2.1 Advantages of Artificial Insemination

- a. Cost of maintaining a bull is saved hence it is cheap.
- b. It prevents the spread of certain diseases and sterility due to genital diseases e.g. Contagious abortion (Vibriosis)
- c. It is possible to isolate inferior bulls before they can be used in breeding process.
- d. It allows early progeny testing.
- e. The semen of a desired size can be used even after the death of that particular sire.
- f. The semen collected can be taken to the urban areas or rural areas for insemination.
- g. It makes possible the mating of animals with great differences in size without injury to either of the animal.
- h. It is helpful to inseminate the animals that refuse to stand or accept the male at the time of oestrus.
- i. It helps in maintaining the accurate breeding and calving records.
- j. It increases the rate of conception.
- k. It helps in better record keeping.
- l. Old, heavy and injured sires can be used.

## 4.2.2 Disadvantages of Artificial Insemination

- a. Inseminator requires special training.
- b. Requires more time than natural services.
- c. If the bull is not properly tested, the spreading of genital diseases will be increased.
- d. Market for bulls will be reduced, while that for superior bull is increased.
- e. Requires heavy capital investment

## 4.3 Heat Detection

Heat is the period when a cow or heifer is ready to be mated by a bull or to be inseminated. This normally occurs every 21 days (or 18 to 24 days). It is a result of changes inside the cow's body which results in the release of an egg required for a successful A.I. service. Poor heat detection or failure to detect heat is a major cause of conception failure in A.I. services. It is therefore important to precisely detect heat and to properly time the insemination.

### 4.3.1 Heat Signs:

The surest heat sign is when the cow or heifer allows other animals to mount her while she remains standing; other heat signs include:

#### Other Signs






- a. Roughened tail head because of being mounted by others
- b. Restless and signs of nervousness, animal may bawl more than usual and may walk in search of a bull.
- c. Vulva is red swollen and has a clear mucus discharge
- d. Reduced milk production.
- e. The cow will lick and sniff other animals.
- f. Frequent maturation (urination) will be observed.
- g. Congestion and hyperemia of membrane.
- h. The tail will be in raised position.
- i. On Palpation uterus will be turgid and the cervix will be opened.

Heat detection is improved if one knows when the cow or heifer is expected to be on heat and practice regular daily herd observation. Observing 3 times a day for about 30 minutes each time is adequate. A cow will first come on heat within 3 to 4 weeks after calving. Heifers and confined cows require closer observation for heat signs.

### 4.3.2 Timing of Insemination for Maximum Conception

Maximal conception is obtained when cows are inseminated between mid-estrus and the end of standing estrus, with good results up to 6 hours after estrus. Success in insemination timing is dependent upon a good heat detection program. In large herds, this means assigning individual responsibility for heat detection and a continued education program for labor. A successful heat detection program and subsequent proper timing of insemination will pay dividends in increasing reproductive efficiency.

### 4.3.3 A practical recommendation for timing of insemination

Number of hours after heat cycle begins	1-6 hrs	6-9 hrs	9-20 hrs	20-28 hrs	28 hrs
Time to breed	Too early	Early	Best time	Still possible	Late
Signs of heat and when shown	Cow bellows, smells other cows, ears are alert, stops eating, less milk produced	Cow mounts other cows and stands when mounted, swollen vulva	End of standing heat, clear mucus discharge from swollen vulva	Cow no longer stands to be mounted, dry mucous at tail	Bloody discharge
<b>Behavioral Signs</b>					

## 4.4 Breeding Technologies

### 4.4.1 Embryo Transfer

It is the process of stimulating a donor cow to release many ova from its ovaries which are then fertilized after normal insemination. An embryo is a fertilized ovum and developing between the stages of 1 cell to a hatched blastocyst. There after the embryos develop and are flushed out of uterus and transplanted to heat Synchronized recipients cows which carry the Pregnancy to term

#### 4.4.1.1 The Embryo Transfer Process

- Selection of Donors & Recipients
- Heat Synchronization of Donors & Recipients
- Super ovulation of Donors
- Artificial Insemination of Donors
- Embryo Flushing
- Embryo Grading & Classification
- Embryo Transplantation

#### 4.4.1.2 Key aspects to a successful Embryo Transfer Programme

- a. Professionalism
- b. Hygiene
- c. Efficiency
- d. Use of high genetic merit sires and donors.

#### 4.4.1.3 Advantages of Embryo Transfer

- a. Genes of same sire same dam multiplied
- b. Faster way of accessing animals of superior genetics
- c. use of superior sires



#### 4.4.1.4 Disadvantages of Embryo Transfer

- a. Low success rate
- b. Very few technical personnel to do transfer
- c. Expensive technology

### 4.4.2 Gender Selected Semen

It is where bull semen is taken through a complex and delicate process to separate X and Y Chromosome Spermatozoa. The selected XX chromosomes Spermatozoa give a possibility of 99% chance of getting a female calf. Sexed semen is mostly used on heifers showing strong heats for one or two services before switching back to conventional semen or natural service for clean-up. This is a practical approach as heifers are generally more fertile than lactating cows and calving difficulty is reduced for heifers carrying a heifer calf compared with a bull calf.

#### 4.4.2.1 Advantages of Gender Selected Semen

##### a. Improving Quality

Artificially inseminating (A.I.) only superior heifers and cows with sexed semen increases the proportion of replacements coming from the best dams available on a farm

##### b. Increasing Quantity

Increases the number of heifers coming through your system, without purchasing replacements by improving the 21-day pregnancy rate in your lactating herd.

#### 4.4.2.2 Disadvantages of Gender Selected Semen

- a. The semen is expensive over Kshs. 5,000.00 per dose.
- b. The conception rates low (40-55%)
- c. Available for only a few bulls (limited genetic selection)

## 5.0 Dairy Upgrading and Registration

The purpose of an up grading scheme is to improve the standard of progeny by a system of each succeeding generation moving up till a standard considered necessary for pedigree status is recorded. Livestock registration is a systematic method of recording and maintaining accurate and authentic ancestral and identification information of animals. Livestock Registration is done by Kenya Livestock Breeders Organization (KLBO) through Kenya Stud Book. Kenya Livestock Breeders Organization (KLBO) is a farmer's body formed under the auspices of the Agricultural Society of Kenya with a specialized function of promoting and coordinating livestock in Kenya. KLBO bring together representatives of the breed societies and representatives of relevant government bodies.

The KLBO serves as the secretariat of the breed societies and its operation is guided strongly by the various breed societies. KLBO has two organs to carry out its functions: Kenya Stud Book, the livestock registration center with a major objective of recording and maintaining accurate and authentic ancestral and identification information of animals and Dairy Recording Services of Kenya Charged with responsibility of milk recording. In both organs, a certificate of registration is issued once an animal has been registered together with a lactation certificate at end of lactation following proper milk recording.

The Kenya Stud Book Maintains up grading scheme for all exotic dairy, beef, sheep, goats and pig breeds e.g. Boran, Sahiwal, Dorper, Galla. The Kenya Stud Book Committee considers recommendations from Breed Societies to up-grade individual animal breeds.

### 5.1 Interpreting The Bull Catalogue

Sire catalogue give following information:-

- Photos of bull and daughters
- Pedigree records of bull (Dam, Grand Dam, Sire, Grand Sire)
- Production of daughters (milk, butter fat, protein)
- Linear classification of daughters (feet and legs, udder structure, dairy character, stature, angularity body capacity)
- Calving ease
- Milking speed

#### 5.1.1 Livestock upgrading scheme

This refers to an ordered system by which the genetic quality of a livestock population is improved through a procedure of consistent use of quality sires such that the progenies (resulting young ones) move to a higher class in each successive generation until a standard requisite for pedigree status is achieved.



#### Pool Grade

Animals placed in this class are either cross bred animals or indigenous animals to be up-graded to Exotic Breeds. They lack specific breed characteristics on inspection or their blood lines is of two different breeds.



#### Foundation Grade (F1)

A foundation grade refers to a cow typical of a particular breed by inspection and clearly identifiable but with very scanty details on its ancestry or none at all. It is a heifer or cow in milk or in calf, typical of the breed by inspection and identifiable.



### **Intermediate Grade (F2)**

This is a female progeny of a foundation animal sired by a registered pedigree sire with proof of service. It is a progeny of a foundation that is milk recorded.



### **Appendix Grade (F3)**

A female progeny of an intermediate animal that is officially milk recorded. This is automatic with proof of service with a pedigree-registered sire. An appendix animal may be upgraded to pedigree status on presentation of a certificate from the Breed Society that it conforms to their rules.



### **Pedigree (F4)**

A progeny of an appendix or pedigree cow that is officially milk recorded sired by a registered pedigree sire with proof of service and conforming to all laid down breed standards.

## 5.3 Livestock Registration

### 5.3.1 Importance of livestock registration

- a. Livestock helps in farm management; selection, culling, claims, feeding, breeding are made easy with registered animals.
- b. Livestock registration is important in value addition-registered and recorded stock fetch better price at the market. A farmer can also access high-end markets which fetch more e.g export market.
- c. With continuous registration a farmer will at the end own pedigree cows hence consistency guarantees ownership of pedigree without necessarily spending a fortune.
- d. Livestock registration gives a farmer a chance to benefit from the contract mating and progeny testing schemes. -Quality semen, discount on semen, good price for a bull calf.
- e. Livestock registration enables farmer utilize marketing opportunities available e.g. Volume entry, Shows and office
- f. At the national level, livestock registration is an important resource materials for research and national planning purposes for the national livestock breeding program.
- g. Livestock registration enhances production efficiency leads to increased production and hence improvement in national food security.

### 5.3.2 Procedure for livestock registration

- a. Interested individuals or enterprises fill in the Kenya Stud Book joining form giving details of livestock kept, contacts, physical locality, and they also apply for herd prefix (the name by which the pedigree herd is known by).
- b. On approval of the herd prefix specific letters are issued to the prospective breeder together with the livestock registration forms.
- c. The breeder fills in an application form for livestock registration for each animal to be registered and liaises with the Kenya Stud Book or the Breed Society on inspection of the stock.
- d. He then forwards the duly filled application for livestock registration form to KSB for issuance of registration certificate.
- e. A minimum fee is paid for each animal registered depending on the class, breed and sex.

### 5.3.3 Registration Certificate

The registration process can take up to 6 years and upon inspection the offspring can be:

- a) Retained in same grade
- b) Moved to next grade
- c) Downgraded to a class lower
- d) Rejected.

A certificate is issued at the end of the lactation, on request. The certificate shows the days the animal has been on milk, calving interval, quantity of milk produced, and butterfat content in kg and percentage. Initially, Kenya Livestock Breeders Organization issued two Certificates. One (Registration Certificate) by Kenya Stud Book and another (Lactation certificate) by Dairy Recording Service of Kenya. KLBO now issues one certificate with details contained in previous certificates.

**Please Note:** During the up-grading process of the dairy animals it is also important to bear in mind that the capacity for milk production is one of the criteria by which genetic qualities of Dairy cattle can be assessed hence the need for milk recording.

## 6.0 Dairy Breeding Records

### 6.1 Breeding Records

These are records maintained to enable the farmer assess the reproductive efficiency of a cow or herd. They are useful for selection & culling which is the basis of livestock improvement in a breeding enterprise or program. When kept well, breeding records will show;

- a) Inseminations
- b) Repeats
- c) Pregnancy diagnosis
- d) Age at first calving
- e) Calving dates
- f) Calving interval
- g) Calving ease
- h) Sex & physical condition of the calf

More important, good breeding records will show the following useful information:

- o Pedigree Records.
- o Individual Phenotypic Records.
- o Family Records.
- o Progeny Records.

Breeding records form an important basis of selection in Dairy cattle.



# ANNEXES

## ANNEX 1. BREEDING RECORD

ANCENSTRY/OWNERSHIP INFORMATION									
COW NAME:					KSB NO:				
COW NO.		COW SOURCE		DATE BORN	FIRST OWNER		SECOND OWNER		THIRD OWNER
SIRE (NAME/NO)	GRAND SIRE NAME/NO				DAM (NAME/NO)		GRAND SIRE NAME/NO		
	GRAND DAM NAME/NO						GRAND DAM NAME/NO		
BREEDING INFORMATION									
WEIGHT AT FIRST SERVICE (KGS)						AGE AT FIRST CONCEPTION (Days/Months)			
AGE AT FIRST SERVICE (Days/Months)						AGE AT FIRST CALVING (Days/Months)			
HEAT DATES	DATE OF A.I./BULL SERVICE	PREG. DIAGNOSIS DATE	DATE DUE TO CALF	DATE TO DRY OFF	DATE CALVED	CALF		CALVING INTERVAL (DAYS)	REMARKS
						SEX	ID NO.		

## ANNEX 2: REGISTRATION RECORDS

### Form 1: KSB Application Form

Application to join the Kenya Stud Book

Please complete the details below

Breed \_\_\_\_\_ No. of Animals \_\_\_\_\_

Breed \_\_\_\_\_ No. of Animals \_\_\_\_\_

Breed \_\_\_\_\_ No. of Animals \_\_\_\_\_

Name \_\_\_\_\_

Address \_\_\_\_\_ Tel: \_\_\_\_\_

Address of location of herd (if different from above):

\_\_\_\_\_  
Please draw a map overleaf showing where the farm is located to guide visiting field staff.

---

### HERD PREFIX APPLICATION

HERDPREFIX \_\_\_\_\_

i.e the name by which your pedigree animals are to be known.

NOTES: This must NOT be the name of a place, district town or breed of livestock.

The prefix must be relatively short, not more than 25 letters when animals name has been added.

### DECLARATION OF OWNER

I wish to join the Kenya Stud Book and apply to have this herd prefix registered in the Kenya Stud Book. I agree to abide by Kenya Stud Book rules

SIGNED \_\_\_\_\_ DATED \_\_\_\_\_

SEND TO: KENYA STUD BOOK  
P.O. BOX 478  
TEL: 051 2216996  
NAKURU

The office is situated on Showground road, Nakuru

### FOR OFFICIAL USE ONLY

HERD PREFIX \_\_\_\_\_

PREFIX LETTERS \_\_\_\_\_

APPROVED/NOT APPROVED \_\_\_\_\_

DATE APPROVED \_\_\_\_\_











## **SMALLHOLDER DAIRY COMMERCIALIZATION PROGRAMME (SDCP)**

Smallholder Dairy Commercialization Programme (SDCP)  
Programme Coordination Unit  
P.O. Box 12261-20100 Nakuru, Kenya.  
Tel: +254-51-2210851  
E-mail: [pcu.sdcp@gmail.com](mailto:pcu.sdcp@gmail.com), [pcu@sdcp.or.ke](mailto:pcu@sdcp.or.ke)  
Website : [www.sdcp.or.ke](http://www.sdcp.or.ke)