Chapter 2

Poultry Breeding and Selection

Muhammad Ashraf and Zaib ur Rehman†

Abstract

Commercial and rural poultry are raised having peculiar characteristics. Commercial strains of poultry selected based on more egg and meat production. Breeds having good potential are selected for production of next generations. Such breeding and selection procedures are required which ensure good potential from future flocks. This chapter deals with breeding, origin and domestication of poultry birds. Introduction of various classes and breeds of poultry also have been discussed in this chapter. Commercial broiler and layer strains have been discussed. Poultry breeding and mating systems are discussed which are helpful for breed improvement. Mechanisms of inheritance of qualitative and quantitative traits that are very important for any type of breeding plan have been discussed. Selection criteria for broiler and layer birds including goals of breeding have been written. Various methods of selection have been discussed. This chapter provides basic knowledge of poultry breeding and selection for improvement of their performance.

Keywords: Poultry Breeding, Poultry Selection, Breeds of Poultry, Breeding and Mating Systems.

2.1 Introduction

It is believed that modern poultry birds are originated from the following four wild species of fowl viz. Red Jungle fowl (Gallus gallus), Java Jungle fowl (G. varius),

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Grey Jungle fowl (G. sonneratti) and Ceylon Jungle fowl (G. lafayetti). It is likely that out of four wild species Red Jungle fowl (Gallus gallus) is the main ancestor. Four species are closely related and are known to interbreed. Pakistan and off-shore islands of Indonesia are the ancestral home of the present day domestic fowl.

2.1.1 Origin, Domestication and Development of Fowl

Poultry birds were spread throughout Western Asia and to shores of Mediterranean by 600 B.C. They were common in Italy by 400 B.C. and were introduced into Northern Europe by 100 B.C. Chickens were imported into America and Australia by early European explorers and immigrants (Muir and Aggery 2003).

2.1.2 Domestication

Our ancient history bears witness to the fact that the people of India were quite familiar with poultry birds such as duck, quail and turkey about 3200 B.C. Chickens were domesticated afterwards. Chickens were kept for cock fighting and fancy purpose instead of meat and eggs. Quails were kept as a hobby and cocks as a fun. Archeological evidences exhibit that chicken domestication started in Pakistan.

2.2 Different Poultry Breeds and their Characteristics

There are four major classes of chicken found all over the world viz. American, English, Mediterranean and Asiatic. Characteristics which are shown in Table 2.1.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>American</th>
<th>English</th>
<th>Mediterranean</th>
<th>Asiatic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body size</td>
<td>Medium</td>
<td>Medium</td>
<td>Light</td>
<td>Heavy</td>
</tr>
<tr>
<td>Purpose</td>
<td>Dual</td>
<td>Dual</td>
<td>Egg</td>
<td>Meat</td>
</tr>
<tr>
<td>Shell colour</td>
<td>Brown</td>
<td>Brown</td>
<td>White</td>
<td>Brown</td>
</tr>
<tr>
<td>Ear lobe colour</td>
<td>Red</td>
<td>Red</td>
<td>White</td>
<td>Red</td>
</tr>
<tr>
<td>Skin colour</td>
<td>Yellow</td>
<td>White</td>
<td>Yellow</td>
<td>Yellow</td>
</tr>
<tr>
<td>Feathers on Shank</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>


2.2.1 American Class

2.2.1.1 Rhode Island Red (RIR)

Origin of Rhode Island Red (RIR) breed is Rhode Island, England. This breed is a cross of Leghorn and Asiatic native stock and red Malay Game. Birds of RIR good meat-producers because bird breast is well-forwarded. Plumage color is dark red or brownish red with glossy appearance. Sickle feathers, tail coverts as well as main tail feathers also appeared black. Female bird possessed a slight black marking in region of lower neck feathers. Brownish red is usual color of this breed but brown, white or buff are also common. Single comb and Rose comb are varieties of RIR.
and single comb variety is more popular. They have yellow skin and shanks, red earlobe and lay brown eggs. Standard weight of cock and hen is 3.8 and 3.0 kg.

**Table 2.2. Important breeds of each class.**

<table>
<thead>
<tr>
<th>American</th>
<th>English</th>
<th>Mediterranean</th>
<th>Asiatic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhode Island Red</td>
<td>Orpington</td>
<td>Leghorn</td>
<td>Brahma</td>
</tr>
<tr>
<td>Plymouth Rock</td>
<td>Dorking</td>
<td>Ancona</td>
<td>Cochin</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>Cornish</td>
<td>Minorca</td>
<td>Langshan</td>
</tr>
<tr>
<td>Wyandotte</td>
<td>Australorp</td>
<td>Spanish</td>
<td>Desi</td>
</tr>
<tr>
<td>Jersey Giant</td>
<td>Red Cap</td>
<td>Blue Andalusian</td>
<td>Aseel</td>
</tr>
<tr>
<td>Delaware</td>
<td>Sussex</td>
<td>Butter Cups</td>
<td></td>
</tr>
</tbody>
</table>

### 2.2.1.2 Plymouth Rock

Plymouth Rock is well-famous breed of America. These are dual purpose birds having long and deep body. Comb type of these birds is “Single Comb”. Body weight of mature bird is ranging from 3.5 to 4.5 kg. Plymouth Rock possess 7 varieties named as Barred, Buff, White, Blue, Silver-penciled, Partridge and Columbian. Plumage is grayish white; each feather crossed by almost black bars which straight, uniform in width and should extend down to skin. All feathers end with a narrow and dark tip which, with alternate light and dark bars, gives a bluish appearance to surface color. Commonly, black spots are present on shanks, predominantly in females. Barred Plymouth Rock and White Plymouth Rocks are famous varieties. White Plymouth rock is extensively used for broiler production.

### 2.1.1.3 New Hampshire

Body shape of New Hampshire bird is comparatively less rectangular as compared to RIR. Birds has well-developed plumage of chestnut color. New Hampshire birds are single comb while color of main tail feathers is black, produce more brown shelled eggs. Standard weight of cock and hen is 3.8 and 2.7 kg, respectively.

### 2.2.2 Asiatic Class

#### 2.2.2.1 Brahma

About one-hundred year ago, Brahma breed was developed by India and exported to England and America. Brahma belongs to Asiatic Class as given in Table 2.2. Birds appeared massive and body weight of mature bird ranges from 4.0 to 5.0 kg. Light, Dark and Buff are varieties of this breed. Light variety is more popular weighing about 509 g more as compared to other varieties. They have pea comb. They possessed black hackle feathers with white edges. Dark Brahma males have greenish black hackle with white edges. Color of tail feathers, wing feathers and plumage in front of neck is black. Female head and upper neck color is silver grey and wingbows are of steel grey color with black linings. Black primary wing feathers has steel grey edge and the back of birds is also of steel grey color with the similar type of penciling as appeared on the body, breast and fluff of the birds. Beak, shanks and toes color is yellow.
2.2.3 English Class

2.2.3.1 Sussex

About 200 years ago, this breed was developed in England. Birds have longer and deeper body with broad shoulders. Birds possessed excellent fleshing qualities. Cock and hen standard weight is 4.0 and 3.1 kg, respectively. Light Sussex and Red Sussex are two popular varieties of this breed. Light Sussex plumage is similar to that of Columbian Wyandot. Lay well in months of summer. Plumage of Red Sussex is dark red except primaries and secondaries. Primaries having black lower webs with red narrow edges while secondaries having black upper webs.

2.2.3.2 Australorp

Australorp was principally developed for egg production in Australia. This breed showed good fleshing qualities which makes it dual purpose breed. These birds have long back. Body is deeper and closely feathered. Birds are single comb type and color of body is black. Australorp male were crossed with female of WLH to develop a hybrid “Austro White”. This hybrid showed excellent laying properties with good vigour. Standard weight of cock and hen is 2.8 and 3.0 kg, respectively.

2.2.3.3 Orpington

This breed was developed in England. Birds of this breed having long and deep body with broad breast. Feathers of birds are loose as compared to breeds of American class. These birds have single comb. Buff, white, black and blue are varieties of Orpington. Body weight of mature birds is 4.5 kg. Buff Orpington is most famous variety as compared to other varieties. It was evolved from Golden spangled Hamburgs, Dark Dorkings and Buff Cochin. Shanks and toes are white.

2.2.4 Mediterranean Class

2.2.4.1 Leghorn

Leghorn breed was originated in Italy and is most important Mediterranean class breed given in Table 2.2. Leghorn breed is well-known in whole world due to high egg production. There are twelve varieties of this breed but only three varieties gain popularity. Popular varieties include Singe Comb Buff, Single Comb White and Single Comb Light Brown. Leghorn breed is active and small breed with neatest appearance. Shape of comb is quite important to Leghorn fanciers. Single comb of male should be of medium size and should stand erect, with five uniform, deeply serrated points. Front point of female comb should stand erect, but remainder of comb should gradually slope tone side. White, Buff and Brown varieties are subdivided further based on comb character, i.e., it is rose or single comb. All varieties have yellow beaks, skin, shanks and toes. Today, White Leghorns are most popular breeds in world for egg production. Mature birds weigh 1.6-1.8 kg.

2.2.4.2 Minorca

Minorca is heaviest and largest breed of Mediterranean class. This breed was initially named as Red-Faced Black Spanish. Bird has long and strong body, comb is larger, wattles are long and the color of earlobes is white. They have black
colored beak, shanks and toes. Minorca is good producer of white shelled eggs of large size. Skin color is white. Mature cock and hen weight is 4.1 and 3.0 kg.

2.3 Commercial Strains of Broilers and Layers

Important commercial strains of broilers are Cobb, Ross, Hubbard, Arbor Acres, Lohmann, Starbro and Indian River. Important commercial strains of layers are LSL, Babcock, Nick-Chick, Hi Sex, Hy-line, Super-Nick and Bovans.

2.4 Rural Poultry

Rural poultry is also known as backyard poultry. Rural poultry performance can be enhanced by introduction of good quality exotic breeds and by intensive selection.

Fig. 2.1. Chicken breeds of various classes
2.5 Poultry Breeding Systems

Various mating systems are used in poultry breeding. Following is a brief description of procedures, advantages and disadvantages of each system.

2.5.1 Out Crossing

Mating birds of same variety but of different strains is called out crossing. Objective is to hold good traits already in one family line and to capture good ones form other ones or it may be an attempt to get rid of undesirable traits in one line and obtain only good ones from another line.

2.5.2 Grading up

This system involves mating of superior males with successive generations of breeding hens of same breed or variety. System continues until progenies produced approach quality of males used. To avoid disadvantages of inbreeding one cock should not be used for a number of times; however different cocks of same breed be selected. This method is of great importance for improving indigenous poultry.

2.5.3 Cross Breeding

Mating of pure bred males of a one breed with pure bred female of another breed is known as cross breeding. Cross breeding in chicken results in higher hatchability, fertility, faster weight gain, disease resistance and low mortality in chickens. Hybrid vigor by cross breeding is extensively used in broiler production.

2.5.4 Line Breeding

Line breeding is like inbreeding but involves breeding of birds less closely related. Mating of cousins or grand sire and granddaughters are examples of line breeding. It is chosen to conserve and perpetuate the good traits of certain outstanding birds. It tends to produce a homozygous genetic condition.

2.5.5 Inbreeding

It is mating of such closely related birds such as brother to sisters. Son to dam and sire to daughter. It is done primarily to intensify the degree of homozygosity. This practice has inconsistent results regarding different characteristics. Losses due to inbreeding includes, low fertility, stunted growth, poor disease resistance, appearance of deleterious genes phenotypically and low egg production.

2.5.6 Top Crossing

This system of breeding has been used successfully in livestock production and is finding in its place in poultry breeding. It involves mating of inbred males with females which are not inbred. Nickability of each line must be determined (Crawford 1990).
2.6 Inheritance of Qualitative and Quantitative Characters

2.6.1 Inheritance of Qualitative Characters

Qualitative traits have simple inheritance mechanism in which only one pair of genes is involved from which one is dominant over other, while some traits showed co-dominance also. Some important qualitative traits are egg shape, feather colour, comb type, egg shell colour, skin colour, ear lobe colour and eye colour.

2.6.2 Inheritance of Quantitative Characters

Traits such as egg production, egg size, growth rate and body confirmation are economically important and do not have simple inheritance as comb type or plumage color. These traits differ from individual to individual by almost imperceptible degrees over a wide range. There is essentially a continuous variation among individuals in population between the extremes. Traits that show this type of variation are known as quantitative traits. Often these characters are turned polygenic traits because many genes must affect the trait considered. These traits are of interest and such breeding systems be devised that will improve average flock performance in several quantitative characters at same time.

Some geneticists have attempted to measure potential improvement that can be made in quantitative characters by mathematical estimates of heritability of these traits. Heritability is defined as the proportion of variation observed in a quantitative trait that is cumulative effect of additive genes affecting that trait. To measure heritability, statistical analysis of genetic data is conducted to attempt to separate variation in a trait due to environment from that due to genetics. Presumably, a trait with high heritability could be improved rapidly by intensive selection, whereas less rapid improvement could be achieved by selection for traits with low heritability. Quantitative traits that seem to have relatively high heritability include body weight, feed consumption, egg weight, age at sexual maturity, egg shape, and shell colour. Lower heritability is reported for total egg production and feed efficiency. Traits with quite low heritability estimates include fertility and hatchability. However, despite an apparent low heritability, significant improvement may be made in many characters by selection techniques.

2.6.3 Heterosis

Performance of offsprings is improved than both parents when birds of different inbred lines, strains, or breeds are crossed is known as heterosis. This can be measured in both the sexes. Sometimes waiting for more records to come is beneficial as single record does not indicate individual real potential. But waiting too long would increase generation interval and reduce progress per unit of time (Bell and Weaver 2007).
2.7 Breeding for Meat and Egg Production

2.7.1 Breeding Plan for Broiler

Following breeds are mostly used for broiler production

2.7.1.1 Female Breed

a. New Hampshire

Females of this breed are used for broiler production due to high egg production with good hatchability, meat quality, rapid growth, fast feathering, early maturity and vigour. Females cross with males of another meat type variety to produce crossbred broiler chicks.

b. White Plymouth Rock

Females of this breed are used for the commercial broiler production. They are good layers. White feathering is beneficial for commercial processing.

c. Qualities of Female Line

Meat line female breeds must have good egg production with high hatchability. In addition, it must have good weight gain, best feed conversion ratio and best feed efficiency.

2.7.1.2 Male Breeds

a. White Cornish

They have short legs, broad body and wide muscular breast but these birds lay few eggs with poor hatchability

b. Light Sussex

This is a meat type breed with white skin. Male birds of this breed have more body weight gain, breast is wide and muscular. Breeding males are white skin broilers.

c. Qualities of Male Line

Male lines must have more weight gain, best-feed conversion ratio, with broad wide breast and muscular appearance. In addition to these characters it must be good producer with good hatchability. Light Cornish or dark Cornish are used for the meat line. Such varieties give the synthetic line having a broad breast, short legs and a plump carcass. White feather meat line is preferred because of easy processing in the commercial plants. Yellow and white skin colour if white skin is preferred then Sussex male line is crossed with New Hampshire which has white skin and white skin is dominant to yellow skin.

2.7.2 Goals of Breeding Policy

Selection should be based in highly heritable traits. Selection must be on the base of family record instead of individual base. Heterozygous individuals are culled.
2.7.3 Present Day Egg Production Lines

Egg production lines are used to produce egg type pullets to produce commercial eggs. Today all commercial White Leghorn lines of chickens are single comb. While Leghorn lines details are as under;

2.7.3.1 Single Line

Breeders use close flock mating and birds are selected from each generation. Select birds after egg production record of one year and may consider following characters as body weight, growth rate, growing liveability. Pullet quality, age at sexual maturity, egg weight, egg production, egg shell quality, interior quality of eggs and adult liveability.

2.7.3.2 Two Line Cross

Two-line cross increase heterosis i.e., male is selected for livability, large body size and female is selected for egg production, shell quality and interior quality of egg. Their offsprings will show good livability, large body size, high egg production, good shell and interior quality.

2.7.3.3 Three Line Cross

Three lines are developed each with different qualities. Line 1 is crossed with line 2 and then their offsprings will be crossed with line 3.

2.7.3.4 Four Line Cross

Line 1 is crossed with line 2 and line 3 is crossed with line 4 then males from 1st cross and females from 2nd cross are mated to produce commercial pullets.

2.8 Selection and its Types

2.8.1 Selection

Selection may be defined as a force or process by which certain individuals in a population are preferred over other to produce next generation. This is an important tool for changing the genotype of a flock, herd or population. Selection is practiced at many stages in the life of the birds. Some birds are not allowed to be born. Culling may take place at any stage from birth till individual reaches the breeding age. Others are kept for several seasons but are culled long before reaching the old age. Still others are kept if they can produce any offspring. Stage at which selection can be practiced depends upon economic factors and convenience as well as when information needed for making choice becomes available. Selecting as early as possible and selecting after having collected enough information may thus be a trade for improved genetic gain.
2.8.2 Types of Selection

2.8.2.1 Mass Selection

Mass selection is based on individuals' own phenotype, on single or multiple records. It is an easy way of selection. Birds are ranked in descending order based on their performance and some of the birds that rank lowest are culled from breeding stock. This is used in selection for traits which are highly transmissible, e.g. growth rate. Yet limitations include trait to have a high genetic control and can be measured in both the sexes. Sometimes waiting for more records to come is beneficial as single record does not indicate real potential of individual. Too long waiting will increase generation interval and reduces progress per unit of time.

2.8.2.2 Family Selection

a) Pedigree Selection

Selection of poultry birds based on performance of their ancestors is called pedigree selection. It is likely to be used when individuals are young and have not yet expressed their own performance. But even if the animal has recorded performance, information on parents and other ancestors can help to improve our "confidence of selecting or rejecting them. It can also be used in case of traits not expressed in one sex only. Sometimes pedigrees are not available or performance of ancestors was not recorded or people are carried away with performance of some admired ancestors while sampling nature of genes limits our ability to exactly know which genes were transmitted to offspring.

b) Progeny Testing

It is used in selection of males especially when records cannot be collected on them for sex-limited traits such as egg production. A cock or cocks may for example be tested are mated each to a random group of hens and their progeny is raised till it expresses its performance that is egg production. As semen storage techniques allow semen to be preserved for number of months, semen from candidate cock is stored and used after the results are available after few months when sufficient pullets have been recorded. However, waiting too long may increase the generation interval, which is one of the major limitations of this method. Recording pullets would require an infrastructure and computation facilities for recorded information.

c) Selection on the Basis of Collateral Relatives

Individual’s selection on basis of information of other family members (other than offspring's and ancestors) may be done on same lines as the pedigree selection. Necessary precaution is not to over emphasize distant relatives. Nowadays all the sources of information are being used for estimating breeding values (genetic worth) of individuals and selecting them to be future parents. Computers made it easier to store large information and process it at a very fast rate.
2.9 Selection of Poultry for Eggs and Meat Production

There are many breeds and varieties of chicken. Many of them are of historical interest and are reared by farmers for recreation. Some are maintained by Government Research Station so that these breeds may be available to breeders if need arises. Others are kept by breeder to produce new commercial hybrid varieties. Certain of these hybrids are egg producers while others are meat and eggs. Farmer should purchase hybrids renowned for good performance.

2.9.1 Selection of Poultry for Eggs

Commercial hybrid layers should have better egg production, bigger egg size, better egg quality, early maturity, low rate of mortality and efficient feed conversion ratio for eggs.

2.9.2 Selection of Poultry for Meat

Commercial hybrid broilers should have better body confirmation, feed conversion ratio, growth rate, disease resistance and low mortality.

2.10 Mating Systems

Number of females to be mated to each male varies depending upon breed, age, health and sexual activity of male. In general, males of light breeds like Leghorns are more active and vigorous than males of heavier breeds such as White Plymouth Rock and Rhode Island Reds. Older males are usually capable of caring for fewer females than cockerels.

2.10.1 Pen Mating

This is a usual method of mating used for pedigree hatching wherein a group of hens can mate with a cock in a pen. Male to female ratio is 1:10 or 12 for light breeds and 1:8 or 10 for heavy breeds. In comparison to flock mating, fertility is lower in pen mating which is due to preferential mating i.e. male may mate more frequently with certain females than with others. Preference for mating is generally attributed to plumage colour etc. Mating pens size is usually 8 feet × 6 feet.

2.10.2 Flock Mating

It is a mass mating system wherein two or more males are mated with several females housed in a single pen. Male to female ratio is generally higher in this method i.e. one male for 12 to 15 females of light breeds and 10 to 12 females of heavy breeds. From pedigree hatching point of view, eggs cannot be identified for their parentage. Under this system, sometimes the aggressive males scare away other males preventing them from mating. Such aggressive males should be removed from the flock. This method also provides an opportunity for birds to mate.
with males of their choice whereas there is no such choice in stud or pen mating. Fertility is generally high in this method therefore, more desirable for producing chicks meant for commercial purpose.

**2.10.3 Stud Mating**

In stud mating the male is kept separately in a coop or pen (2 feet × 3 feet) and females are picked up from the pen one by one and put into the coop. After mating, female is replaced by another female and so on. In comparison to flock or pen mating it involves more work and labor but this method has advantage that more offspring can be obtained from a sire of high merit. On the other hand, by this method it is possible to mate one male to many females. To ensure good fertility the hen should be stud mated at least once a week. This method results in higher fertility as compared to flock or pen mating. This method of mating can also be employed if birds are kept in cages.

**2.10.4 Shift Mating**

It is type of mating wherein sires are shifted in breeding pens. This method can be employed in breeding programs (family breeding) where breeding value of more number of males needs to be tested for locating superior males. At the same time by shifting male, a female can be mated with several males and her breeding worth can be evaluated more precisely. Major hindrance in shifting of males in a breeding pen during season is problem of accuracy of parentage of progeny since fertility is maintained for 2-3 weeks even after removing cock. This difficulty may be overcome by discarding eggs for one week after change of males. Main advantage of this system is that many males can be tested in a limited space. Pen mating does not differ from this system except males are shifted from one pen to another in a sequence.

Suppose 30 males are to be tested with a facility of 10 breeding pens. A group of females are housed in each pen. Put 10 males in pens on first March of a year. Collect eggs from 7/3 to 21/3 and set in incubator. Remove first set of males from pen on 15/3 and put second set of males(11 to 20) on 21/3 in pen and start collecting eggs from 28/3 to 11/4. Remove second set of males on5/4 and put third set of males (21-30) on 11/4. Start collecting eggs from 18/4 onwards. In the same manner, another set of males may be shifted. Gap between two sets of males will be of 2 weeks which insufficient. It has been observed that in presence of fresh spermatozoa old ones get inactivated. A minimum of four shifts would be required to obtain enough data for evaluating females. This type of mating generally used under di allele crossing.

**3.10.5 Artificial Insemination (A.I.)**

In this procedure semen is collected from males and females are inseminated. Major use of A.I. is in heavy birds whose fertility is generally low under pen mating. Nowadays, A.I. is being practiced on many broiler breeder farms with very good hatchability. However, it is also practiced when layer breeder is kept in cages.
Fertility can be increased by adopting A.I. as well as service of a valuable male can be extended. Practice of A.I. requires some training on the part of both operator and male. Method consists of two operations stimulating male to ejaculate semen and averting female cloaca.

3.10.5.1 Collection of Semen

Hold male in left hand, head extending under the arm. Massage with right hand the soft sides of its abdomen between gizzard and pelvic bones to stimulate ejaculatory organ. Fingers of right hand are outspread at the start of stroke but brought together at the end of strokes to converge on the vent. Stroking of male's back should be done moving hand in direction of bird's vent only. Such a stimulus causes trained male to avert or protrude vent region. When this occurs a quick motion of strokes will cause male to ejaculate. Squeezing pressure is applied by thumb and index finger inward and downward at a point just above die vent. Semen is collected by an assistant in an A.I. funnel by holding it under vent.

3.10.5.2 Precautions While Collecting the Semen

Males should be separated from females at least one week before an attempt is made to collect semen. Feathers around male's vent should be plucked off to obtain semen easily. Collection of semen may be carried out daily depending upon the need. However, thrice a week collection will give maximum number of spermatozoa over a long period. Semen contaminated with foreign material like urine and faeces should not be used.

Normally one should use fresh semen and keep it warm at body temperature and use it within an hour. Depending upon the concentration of spermatozoa it can be diluted in normal saline. It has been reported that 20 million spermatozoa per insemination (weekly) are required to get optimum fertility. Diluents for short term and long term storage of bird semen are available.

3.10.5.3 Quality of Semen

Semen has a milky thick appearance. Mixture of urine changes colour of semen to yellow. Normal pH range for semen is 7.3 to 7.8. Volume of semen varies between 0.40 to 1.80 cc depending upon breed.

3.10.5.4 Insemination

Pullet is held in left hand by an assistant head down with its back resting against person's chest in such a manner that feathers below vent can be pressed downward. At the same time the bird's abdomen is compressed gently but firmly with right hand. Thus, cloaca becomes averted. Pressure is applied to abdomen to a degree that vent region is forced to avert exposing opening of cloaca into vagina. Opening of vagina is at left side of vent. This compression will also aid in evacuation of faeces present in cloaca. When aversion is accomplished insemination instrument (Hypodermic syringe 1 cc capacity) is inserted about an inch into vaginal opening before applying pressure to eject semen. About 0.02 (1 drop) to 0.05 cc (2 drops) of semen is sufficient. Inseminate female once a week. One cock provides semen to inseminate 30 hens/week (Leeson and Summers 2000).
2.11 Fancy Breeds and their Importance

There are many fancy breeds; some most important fancy breeds in chicken are Black Minorca, White Bantam, Aseel, Buff Orpington and Cochin. Fancy birds are kept for show purpose/entertainment and have economic importance.

Conclusion

Commercial and rural poultry are raised having peculiar characteristics. Commercial strains of poultry selected on the basis of more egg and meat production. Breeds having good potential are selected for production of next generations. Such breeding and selection procedures are required which ensure good potential from future flocks.

References


