
UNIT 1 BREEDS, VARIETIES AND STRAINS

Structure

- 1.0 Objectives
- 1.1 Introduction
- 1.2 Origin of Fowl
- 1.3 Common Breeds of Poultry
 - 1.3.1 Chicken
 - 1.3.2 Duck
 - 1.3.3 Emu
 - 1.3.4 Geese
 - 1.3.5 Guinea Fowl
 - 1.3.6 Quail
 - 1.3.7 Turkey
- 1.4 Let Us Sum Up
- 1.5 Glossary
- 1.6 Suggested Further Reading
- 1.7 References
- 1.8 Answers to Check Your Progress

1.0 OBJECTIVES

After studying this unit, you will be able to:

- describe the characteristics of common breeds, varieties and strains of poultry;
- classify chicken based on their place of origin, commercial value and utility;
- identify different breeds of chicken and duck; and
- differentiate between egg and meat type birds.

1.1 INTRODUCTION

During the past two centuries, more than 300 pure breeds and varieties of chicken have been developed. However, few have survived commercialization and are being used by modern chicken breeders; for instance White Leghorn, White Cornish, Red Cornish, New Hampshire etc. However, most of the other breeds are kept for exhibition purpose only; some have even been lost forever and others are maintained by private or Government breeding farms and are available to breeders, if necessary.

1.2 ORIGIN OF FOWL

Domestication of poultry seems to have been undertaken in the south-east Asia. By 1000 BC, the chickens were brought to India and later on, they spread north, westwards and reached Greece by 525 BC. By the beginning of the Christian era, the birds were already popular in West Asia and East Europe, and then gradually reached South Africa, Australia, Japan, USSR and USA.

Do you know from where the domestic fowl originated? Here is the answer. Jungle fowls are the ancestors of the present day poultry breeds. There are four known species of wild fowl and they belong to the same genus “Gallus” meaning a cock. The four species are as follows:

- *Gallus gallus* or *Gallus bankiva* - Red Jungle Fowl
- *Gallus lafayetti* - Ceylon Jungle Fowl
- *Gallus sonneratii* - Grey Jungle Fowl
- *Gallus varius* - Javan Jungle Fowl

The Red Jungle fowl is supposed to be the principle contributor for the development of modern day poultry and is widely distributed throughout Burma, China, India, Philippines, Sumatra and Thailand. The plumage (colour of the feather) of females resembles that of Brown Leghorn, the males have orange red feathers in hackle, wing bow and saddle regions, while the breast is black. Eggs are buff (off-white) in colour. The legs are slate (dark bluish grey) coloured. The comb is all red. There are five sub-species of Red Jungle fowl which are as follows:

- *Gallus gallus bankiva* - Javan Red Jungle Fowl
- *Gallus gallus gallus* - Cochinese Red Jungle Fowl
- *Gallus gallus jabouillei* - Tonkinese Red Jungle Fowl
- *Gallus gallus murghi* - Indian Red Jungle Fowl
- *Gallus gallus spadaceus* - Burmese Red Jungle Fowl

Check Your Progress 1

Note: a) Use the space given below for your answers.

b) Check your answers with those given at the end of the unit.

1)are the ancestors of present day poultry breeds.

2) When and where the domestication of poultry have undertaken?

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1.3 COMMON BREEDS OF POULTRY

There are many species of birds included under poultry viz., Chicken, Duck, Geese, Quail etc. and within each species there are many breeds available. Different breeds available under each species are discussed in this section.

To begin with, do you know what is the difference between a breed, variety and strain? You would have come across the word “**Breed**” in your Science classes. In case of Poultry, breed generally refers to a group of birds with the following characters:

- 1) Each bird looks similar to one another (similar in shape and conformation).
- 2) Birds hatched out from eggs produced by birds which are similar to look at (descended from common ancestry).

- 3) When they are mated among themselves, produce young ones which will look exactly like parents (breed true to type).

Ex: New Hampshire, Plymouth Rock, Leghorn etc.

For easy understanding, breed refers to a group of bird that have similar body shape and conformation, they breed true to the type and are descended from common ancestry.

Within a breed, a sub-group which differ either in comb shape or plumage colour or both is referred to as “**Variety**”. You might be aware that even in rice, we have varieties like Basmati, Sona etc.

Ex: Plymouth Rock (White/Barred), Cornish (White/Red) etc.

Within a variety, another sub-group may be developed by a breeder with a specific desired characteristic is called “**Strain**”

Ex: Babcock strain of Single comb White Leghorn

1.3.1 Chicken

Before learning about the different breeds, varieties and strains of chicken, it is suggested to go through the different parts of a chicken thoroughly (Fig. 1.1) for better understanding.

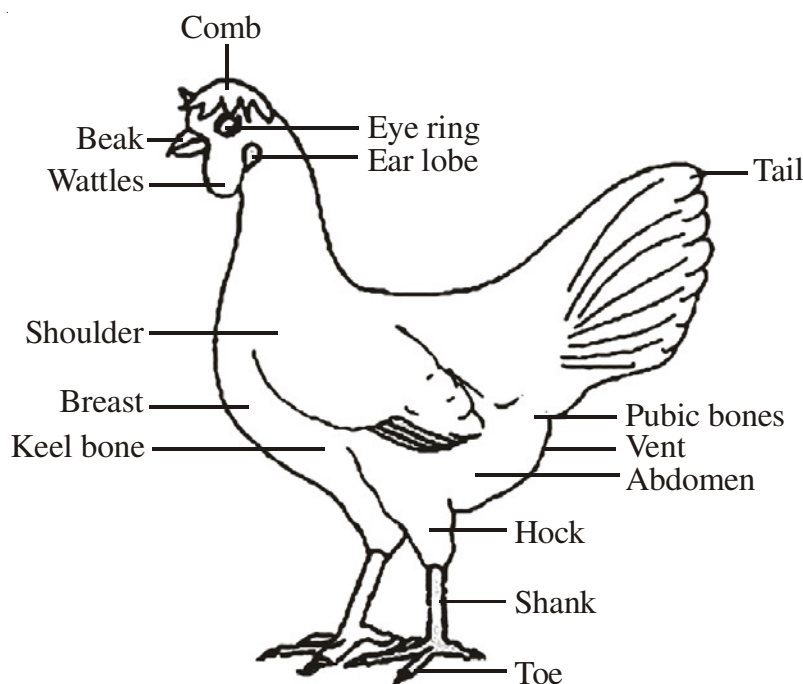


Fig. 1.1: Parts of a chicken

It is easier to understand and study the various types and breeds of chicken when they are classified. The easiest classification is based on the origin. For example; I am from India and I am known as an Indian. In the same way, chicken are classified based on the country of origin.

i) Classification of chicken based on the place of origin

This is currently internationally accepted classification of chicken.

There are many “Classes” of chicken based on the geographical location from where they originated; of these, American, Asiatic, English and Mediterranean are the most

popular. Now, when you look at a bird, you should be able to say that this bird is English, American etc. So, you will learn a little more about their characteristics and standards.

(a) American Class

The common characteristics of birds belonging to American class of chicken are presented in Table 1.1.

Table 1.1 : Common Characteristics of American Class of Chicken

Characteristics	Colour of				Comb	Shank Feathering
	Ear lobes	Skin	Shank	Eggs		
	Red	Yellow	Yellow ³	Brown	Single ⁴	Absent
Breeds	Varieties					
Plymouth Rock ¹	Barred, White, Buff, Silver-pencilled, Partridge, Columbian, Blue					
Dominique	No varieties					
Wyandotte	Silver-laced, Golden-laced, White, Black, Buff, Partridge, Silver-pencilled, Columbian, Blue					
Java	Black, Mottled					
Rhode Island Red ²	No plumage varieties					
Rhode Island White	No varieties					
Buckeye	No varieties					
Chantecler	White, Partridge					
Jersey Giant	Black, White					
Lamona	White					
New Hampshire ¹	No varieties					
Holland	Barred, White					
Delaware	No varieties					
¹ Popular breeds as female line for broiler production; ² Popular dual purpose breed, occurs as Rose comb variety also; ³ Black in Jersey Giant; and ⁴ Rhode Island White, Dominique and Wyandotte Rose, Buckeye and Chantecler Pea <i>Source: Sreenivasaiah, 2006</i>						

Some of the important breeds of this class are as follows:

- **New Hampshire:** This dual purpose breed is originated from America. The body is broad, deep and rounded. The plumage is chestnut red in colour (Fig. 1.2). Standard weight of Cock and Hen is 3.8 kg and 3.1 kg, respectively. This breed is mostly used as female line in broiler breeding.



Fig. 1.2: New Hampshire

- **Plymouth Rock:** Birds of this breed have long body and good depth. They are docile (quite); possess a long, broad back and a moderately deep, full breast. The standard weight of Cock is 4.2 kg and Hen is 3.2 kg. The White variety (Fig. 1.3) is extensively used as male line in broiler breeding.



Fig. 1.3: White Plymouth Rock



Fig. 1.4: Rhode Island Red

- **Rhode Island Red:** The Rhode Island Red (RIR) originated from Rhode Island of New England. They are cross of Red Malay Game, Leghorn and Asiatic native stock. It has long rectangular body, back is flat and the breast is carried well forward. The plumage is rich dark or brownish red in colour (Fig. 1.4). The Standard weight for Cock is 3.8 kg and Hen is 2.9 kg. The annual egg production ranges from 225 to 260 eggs per bird.

(b) Asiatic Class

The common characteristics of birds belonging to Asiatic class of chicken are presented in Table 1.2.

Table 1.2: Common Characteristics of Asiatic Class of Chicken

Characteristics	Colour of				Comb	Shank Feathering
	Ear Lobes	Skin	Shank	Eggs		
	Red	Yellow ¹	Yellow ²	Brown	Single ³	Present ⁴
Breeds	Varieties					
Brahma	Light , Dark, Buff					
Cochin	Buff, Partridge, White, Black, Silver-laces, Golden-laced, Blue, Brown, Barred					
Langshan	Black, White, Blue					
¹ White in Langshan; ² Bluish-black in Langshan; ³ Pea comb in Brahma; and ⁴ Characteristic feature of the Class.						
<i>Source: Sreenivasaiah, 2006</i>						

Source: Sreenivasaiah, 2006

Some of the important breeds of this class are as follows:

- **Brahma:** It is originated from Brahmaputra region in India where they were known as “Gray Chittagongs”. The body is circular shaped and massive in appearance due to profuse, loose feathering and feathered legs and toes. The Mature weight of Cock is 5.5 kg and Hen is 4.2 kg.
- **Cochin:** It is originated from India. It is a fancy bird. The Standard weight of Cock is 5.1 kg and Hen is 3.9 kg.

(c) English Class

The common characteristics of birds belonging to English class of chicken are presented in Table 1.3.

Table 1.3 : Common Characteristics of English Class of Chicken

Characteristics	Colour of				Comb	Shank Feathering
	Ear Lobes	Skin	Shank	Eggs		
	Red	White ³	Yellow ⁴	Brown ⁵	Single ⁶	Absent
Breeds	Varieties					
Dorking	White, Silver-grey, Coloured, Red					
Redcap	No varieties					
Cornish ¹	Dark, White, White-laced Red, Buff					
Orpington	Buff, Black, White, Blue					
Sussex	Speckled, Red, Light					
Australorp ²	Black					
<div>¹ Popular breed as male line for broiler production</div> <div>² Black Orpington of Australia</div> <div>³ Yellow in Cornish</div> <div>⁴ Dark-slate/Blue in Australorp</div> <div>⁵ White in Dorking and Redcap</div> <div>⁶ Pea in Cornish and Rose in Redcap</div> <div>Source: Sreenivasaiah, 2006</div>						

Source: Sreenivasaiah, 2006

Some of the important breeds of this class are as follows:

- **Australorp:** The breed is from Australia and has deep oval body (Fig. 1.5). The Plumage is lustrous greenish black in all the sections. The back is long and the body slopes gradually towards the tail. The Standard weight of Cock and Hen is 3.8 kg and 3.0 kg, respectively. “Austro-white” is a hybrid cross between Australorp male and White Leghorn female. It is an excellent layer.



Fig. 1.5: Australorp

- **Cornish:** This is the native breed of England. The breed is heavily fleshed (meated) with compact body and a good depth. Body is well rounded on all sides and carried higher in front than rear (back). The Standard weight of Cock is 4.6 kg and Hen is 3.5 kg. The breed is used as male line in broiler breeding.
- **Orpington:** The origin of this breed is England. It has deep and well rounded body. The breast is full and back is broad. The Standard weight of Cock is 4.5 kg and Hen is 3.5 kg.
- **Sussex:** The breed is of England origin. It has long rectangular body. The Standard weight of Cock is 4.0 kg and Hen is 3.1 kg.

(d) Mediterranean Class

The common characteristics of birds belonging to Mediterranean class of chicken are presented in Table 1.4.

Table 1.4 : Common Characteristics of Mediterranean Class of Chicken

Characteristics	Colour of				Shank Feathering
	Ear Lobes	Skin	Shank	Eggs	
	White	Yellow ²	Yellow ³	White	Absent
Breeds	Comb shape		Varieties		
Leghorn ¹	Single		Dark brown, Light brown, White, Buff, Black, Silver, Red, Blood-tailed red, Colombian, Golden duck wing		
	Rose		Dark brown, Light brown, White, Black, Buff, Silver		
Minorca	Single		Black, White, Buff		
	Rose		Black, White		
Spanish	Single		White-faced black		
Andalusian	Single		Blue		
Ancona			Single comb, Rose comb		
Sicilian Buttercup	Buttercup				
Catalana	Single		Buff		
¹ Popular egg producing breed;					
² White in Minorca, Spanish, Andalusian and Catalana; and					
³ Dark slate/Black in Minorca, Slaty blue in Andalusian.					
Source: Sreenivasaiah, 2006					

Source: Sreenivasaiah, 2006

Some of the important breeds of this class are as follows:

- **Leghorn:** This breed is originated from Italy. It is the world's number one egg producer. It has small, oval and compact body, relatively long neck, prominent breast and long shanks (Fig. 1.6). The single comb of the male should be of medium size and should stand erect with five uniform deeply serrated points. The front point of female should stand erect; but remainder of the comb gradually slope to one side. The Standard weight of Cock is 2.7 kg and Hen is 1.8 kg. Annual hen-housed egg production per bird is 290-320 eggs.



Fig.1.6: White Leghorn

- **Minorca:** It is a native breed of Spain and is the largest and heaviest of Mediterranean breeds of poultry. It has a long rectangular strong body. The Standard weight of Cock is 4.1 kg and Hen is 3.0 kg.

ii) Classification of chicken based on commercial value and utility

The chicken can also be classified based on their commercial value or reason for which they are reared (utility). This is also referred to as "Type" classification in which a breed is designated as the following "Type" depending upon the product of commercial value for which it will be raised. However, due to overlapping of characteristics of breeds between the "Types", this classification is no more in practice.

Classification based on utility (Type):

- Dual purpose - Rhode Island Red
- Egg-type - White Leghorn
- Fancy/Exhibition type - Bantams, Silky (Fig. 1.7)
- Game type - Aseel (Fig. 1.8)
- Desi type - Chittagong, Kadaknath (Fig 1.9)
- Meat-type - Cornish



Fig. 1.7: Fancy type (Silky)



Fig. 1.8: Game type (Aseel)



Fig. 1.9: Desi breed (Kadaknath)

Some of the Indian Breeds are Aseel, Busra, Chittagong and Kadaknath.

Classification based on commercial value:

Notwithstanding the above, you may also be familiar with the following classification based on commercial value as egg and meat producing chicken:

- **Common egg-type chicken (strains of Single comb White Leghorn)**
Babcock, Bovans, BV-300, Dekalb, ISA, Euribrid, HH-260, Hyline, Keystone, Lohmann and H & N Nick chick.
- **Common meat-type hybrid chicken (hybrids with White and / or Red Cornish as male line White Plymouth Rock and/or New Hampshire as the female line)**
Anak-2000, Arbor Acres, Cobb, Hub chicks, Hubbard, Hybro Ross, Steggles, Lohmann, Pilch, Starbro, Marshall, Peterson, Samrat-2000 and Tegel.

Check Your Progress 2

Note: a) Use the space given below for your answers.

b) Check your answers with those given at the end of the unit.

1) What do you understand by “Breed”, “Variety” and “Strain”?

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2) What are the different breeds of chicken commonly used for egg and meat purposes?

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Activity 1

Visit a nearby poultry farm, identify and note down the breed/strain of broiler or layer maintained in the farm. Give your opinion about the type or class it belongs to.

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1.3.2 Duck

Ducks, like chicken, are useful for eggs (Khaki Campbell), meat (Pekin) and exhibition (Crested) purposes. In other parts of the world, the duck (Fig. 1.10) is popular for meat purpose, whereas in India and few other countries, it is more popular for egg production.

Muscovy ducks differ from the rest in their incubation period which is 35 days instead of 28 days (other breeds). Further, they are a different race and hence all the crosses with other breeds are sterile. The difference in size of drakes (males) and ducks (females) is most pronounced in Muscovy than in other breeds, Runners are popular for their gait, stance and carriage; body held virtually perpendicular to the ground. Skin of most breeds is yellow excepting that of Aylesbury and Muscovy which have pinkish white skin.

Egg colour is usually light brown with the following exceptions: Indian Runners produce white eggs; Cayuga and Black East Indies produce black eggs at the beginning of production which later on changes to blue as production progresses; Rouen produces blue eggs as well as white eggs.



Fig. 1.10: Indigenous Ducks

Duck occupies second place to chicken in production of eggs in our country. Major concentration of duck is in the States of Assam and West Bengal followed by Andhra Pradesh, Bihar, Jammu & Kashmir, Karnataka, Kerala, Manipur, Orissa, Tamil Nadu, Tripura and Uttar Pradesh. The common breeds of duck are as follows:

(i) Egg type

Khaki Campbell and Indian Runner are the common egg type ducks reared in India. Their description is as follows:

- **Khaki Campbell:** This breed is developed in England by crossing Rouen, White Indian Runner and Mallard. Plumage colour is Khaki (Fig. 1.11). The size of head of male is larger than female. Bills and shanks are black in colour. The body weight is light. Khaki Campbell duck lays 280-300 eggs per bird per year (it can lay up to 365 eggs a year; an egg a day without a break). The standard weight of drake (male) and duck (female) is 2.2 to 2.4 kg and 2.0 to 2.2 kg, respectively.



Fig. 1.11: Khaki Campbell

- **Indian Runner:** Indian Runner is next to the Khaki Campbell duck in respect of egg production and native breed of Indonesia. The three standard varieties of Indian Runner are white, pencilled and fawn. The body is broader in front and slightly tapering at back. The outstanding feature of this breed is its perpendicular carriage which gives a lean appearance with wedge-shaped bill. It lays 250-280 eggs per year per bird. The standard weight of drake and duck is 1.6 to 2.2 kg and 1.4 to 2.0 kg, respectively.

(ii) Meat type

Aylesbury, Muscovy and Pekin are the common meat type ducks reared in India. Their description is as follows:

- **Aylesbury:** It is a native bird of England and plumage of both sexes is white. The legs and feet are bright orange and bill is yellow in colour. This is considered as deluxe table bird because of its light bone and high percentage of creamy white flesh. The standard weight is around 4.5 kg for Drake and 4.0 kg for duck.
- **Muscovy:** It is originated in South America. There are no feathers on the face and the skin is bright red in colour with caruncles around the eyes (Fig. 1.12). Drake has a knob on head which gives the appearance of a crest. Voice is not characteristic of sex. The incubation period of eggs is 35 days. Muscovies, when crossed with other breeds, produce sterile ducks called “Mule ducks”. The standard weight of drake and duck is 4.5 kg to 6.4 kg and 2.2 to 3.1 kg, respectively.



Fig. 1.12: Muscovy Duck

Source: <http://upload.wikimedia.org/wikipedia/commons/8/85/Muscovy-duck-2.jpg>

- **Pekin:** It is originated in China and its white variety is most popular for meat purpose. It has creamy white plumage, yellow flesh, long, broad and deep body with bills and legs deep orange in colour (Fig.1.13). The white Pekin attains 2.2 to 2.5 kg body weight in 7 weeks of age with a feed conversion ratio of 1:1.26-3.0 kg. It lays around 160 eggs per bird per year. The standard weight of drake and duck is 4.5 and 3.6 kg, respectively.



Fig. 1.13: White Peckin

1.3.3 Emu

The emu is another avian species, which has almost similar scope like Ostrich in India (Fig. 1.14). It is a heavy bird, weighing about 30-40 kg. Its egg weight is about 600 to 800 g. The meat is tasty and feathers are in great demand in international market. The emu oil is a natural product, which has been used for thousands of

years for the treatment of muscular and arthritic pain. Beauty and body care products with emu oil are now available abroad. There is no specific breed of emu available in India.



Fig. 1.14: Emu

1.3.4 Geese

Sebastopol is the oldest domesticated breed. Heavy breeds of geese will have broad, flat back, deep, full rounded breast, and long body (Fig. 1.15). Sebastopol, Chinese, Egyptian and Canada geese are ornamental in addition to being productive; the latter is still semi-domesticated. Tufted Roman geese have a characteristic cylindrical tuft on their crown. Saddleback Pomeranian, on the other hand, is distinguishable by the dark markings on the head. Pilgrim geese are unique for sex-linked plumage which helps sex differentiation at hatch. Egyptian geese are the smallest of all the breeds and have a characteristic aggressive character.

Male geese are known as ganders and the females are called geese. In India, Brown-Backed and White geese are found.



Fig. 1.15: Geese

1.3.5 Guinea Fowl

These birds derive their name from Guinea, a part of the West Coast of Africa. The domestic guinea fowls descended from one of the wild species of Africa and they have been domesticated for centuries, the ancient Greeks and Romans were known to have raised them as table birds. They make their characteristic sound whenever anyone or anything moves in their vicinity. Hence, they also act as “Watch birds”!



Fig. 1.16: Guinea Fowl

The guinea fowls (Fig. 1.16) are referred by different names like “chatra” in Haryana, Pakistan, Punjab, and Rajasthan, as “Titar” and “Chine Murgi” in Bangladesh and West Bengal. Although this continent is not the natural habitat, India still has a large population of guinea fowl, ranking third after chicken and duck. It is well adapted to diverse agro-climatic conditions prevailing in arid and semi-arid regions. It is also accepted by the marginal farmers as well as other vulnerable groups as small-scale poultry enterprise and are being raised under free-range in the states of Madhya Pradesh, Punjab, Uttar Pradesh and some other parts of India.

There are three important varieties of domesticated guinea fowl namely: Lavender, Pearl and White. The guinea fowl meat is tender but dark in colour. The guinea fowl is a seasonal breeder and lays eggs between March and September.

1.3.6 Quail

The quail production is an ideal alternative to boost poultry production in rural India. Its farming in villages will also enhance the availability of animal protein in village and thus solving the problem of malnutrition in villages. In India, quail is commonly popular as “Bater”. Quail meat and eggs are table delicacy; contain less fat and more calcium. It is a profitable enterprise in a shorter duration of time and low capital investment proposition.



Fig. 1.17: Japanese Quail (Male and Female)

In India, the species of Japanese quail was introduced by the Central Avian Research Institute (CARI), Izatnagar, Bareilly (Uttar Pradesh) during 1974-76 by importing them from USA (Fig. 1.17). It has now spread to Central Govt. Poultry Organizations also. The females (150-180 g) are heavier than males (120-130 g). The meat type quails are ready for sale at about 5 weeks of age and meat is very delicious. The egg type quails come into production at 5-6 weeks of age and reach their peak production by 9-10 weeks of age. The average production touches more than 250 eggs per quail per year. The average weight of an egg is 10 g and its chick weight on hatching is about 6-7 g.

1.3.7 Turkey

Have you ever seen a turkey? This is how it looks (Fig. 1.18):

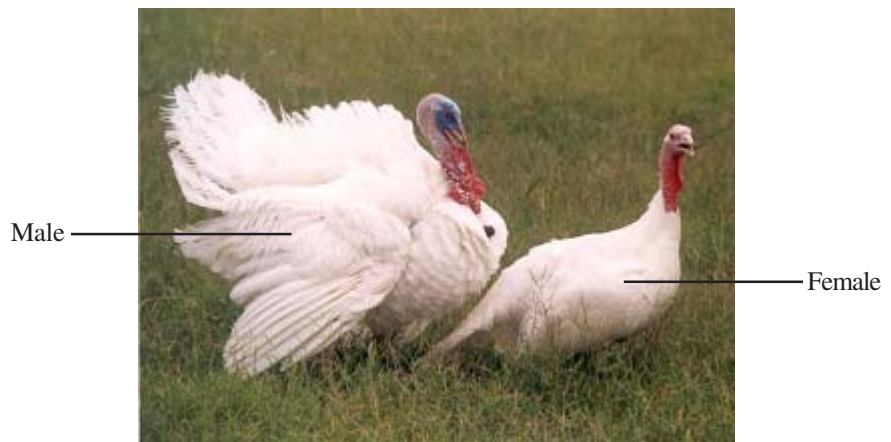


Fig. 1.18: Turkey (Male and female)

The turkeys originated from Central and Northern America and were domesticated about 300 years ago by the Europeans colonized in North America. Among the various poultry species, the turkey is reared mainly for meat purpose. This farming is almost non-existent in India. Small flocks are available at some of the Agricultural Universities and CARI for research and development purpose only. The turkey farming has a greater potential in India as its farming will help in accelerating the poultry meat production and may bridge the gap between demand and supply of poultry meat. Since the turkey are bigger in size, cut-up parts of turkey meat can be marketed in various attractive packaging suited to the individual consumer.

Turkeys are primarily raised for meat and most popular varieties are Broad-breasted Bronze, White Holland and Beltsville Small White. Turkey egg (Fig. 1.19) has characteristic brown speckles (marks).



Fig. 1.19: Turkey egg

Weight of adult toms (male turkey) recorded is 7.3 to 10.0 kg (Beltsville and Royal Palm), 10.4 to 15.0 kg (Narragansett, Black, Slate and Bourbon) and 11.4 to 16.3 kg (Bronze and White Holland); corresponding values in case of adult hens (female) is 4.5 to 5.4 kg, 6.4 to 8.2 kg, and 7.3 to 9.1 kg, respectively.

Some of the important varieties of Turkey are as follows:

- **Beltsville White:** It is a medium sized turkey having white feathers (Fig. 1.20). They produce more eggs compared to Broad Breasted Bronze and therefore included in breeding programmes. The toms will be weighing 10-12 kg at maturity and hens 7-8 kg.



Fig. 1.20: Beltsville White



Fig. 1.21: Broad Breasted Bronze

- **Broad Breasted Bronze:** It is the most popular and heaviest variety of turkey. As the name indicates, it is having a broad and prominent chest region and bronze coloured feathers (Fig. 1.21). The males and females at maturity weigh 15-18 kg and 12-13 kg, respectively. Most of the present day hybrid turkeys are crosses of different strains of Broad Breasted Bronze or Beltsville White. One of the common hybrid turkeys popular in North America is Nicholas Turkey. It is the cross of the above two.
- **White Holland:** It is a popular variety of turkey most commonly found in European countries. It is bred and developed in Holland after importing several varieties from North America. They are also used as crosses.

Check Your Progress 3

Note: a) Use the space given below for your answers.

b) Check your answer with those given at the end of the unit.

- 1) Name important breeds of egg and meat type ducks.

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- 2) Name some important varieties of Turkey.

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- 3) and are the three important varieties of domesticated guinea fowl.
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Activity 2

Survey your area and collect information on different types of poultry birds other than chicken being reared. Identify the breed/variety of duck, turkey and guinea fowl being reared, if any.

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1.4 LET US SUM UP

The domestication of poultry seems to have been undertaken in the south-east Asia. Jungle fowls are the ancestors for the present day poultry breeds. There are four known species of wild fowl and they belong to the same genus “Gallus” meaning a cock. During the past two centuries more than 300 pure breeds and varieties of chicken have been developed. However, few have survived commercialization and therefore are used by modern chicken breeders. Breed refers to a group of bird that have similar body shape and conformation, they breed true to the type and are descended from common ancestry. Classification of chickens based on the place of origin is currently internationally accepted classification of chicken. Some of the important breeds of chicken are New Hampshire, Rhode Island Red, Plymouth Rock and Leghorn. The common breeds of ducks are Khaki Campbell, Indian Runner and Muscovy. There are three important varieties of domesticated guinea fowl namely: Lavender, Pearl and White. Turkeys are primarily raised for meat and most popular varieties are Broad-breasted Bronze, White Holland and Beltsville Small White.

1.5 GLOSSARY

Barred	: Marked with stripes or bands.
Breed	: Group of birds that have similar body shape and conformation, they breed true to the type and are descended from common ancestry.
Buff	: A brownish-yellow colour.
Carriage	: manner of carrying the head and body.
Hen-housed Egg Production	: Average number of eggs produced divided by number of hens housed at the beginning of laying period multiplied by 100.
Heterozygosity	: Dissimilar.
Homozygosity	: Similar.
Hybrid	: An individual that is the offspring (young one) of two parents that differ in one or more inheritable characteristics, especially the offspring of two different breeds/varieties of the same species or the offspring of two parents belonging to different species.

Hybrid Vigour	: The tendency of a crossbred bird or animal to have qualities superior to those of either parent.
Mottled	: Having spots or patches of colour.
Plumage	: The covering of feathers on a bird.
Serrated	: Having a saw-toothed edge or margin notched with tooth like projections.
Species	: A group of individuals having some common characteristics or qualities. A group of closely-related and inter-breeding living beings.
Speckled	: Having a pattern of dots.
Sterile	: Not capable of reproducing or incapable of producing offspring (young ones); not producing offspring.
Strain	: A group of bird within a variety bearing the name of a place or person connected and produced by a breeder.
Variety	: Subdivision of a breed distinguished either by plumage colour or comb type.

1.6 SUGGESTED FURTHER READING

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1.8 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

- 1) Jungle fowls.
- 2) Domestication of poultry seems to have been undertaken in the South-East Asia. By 1000 BC, the chickens were brought to India and later on, they spread to north, westwards and reached Greece by 525 BC. By the beginning of the Christian era, the birds were already popular in West Asia and East Europe, then gradually reached Australia, Japan, South Africa, USA and USSR.

Check Your Progress 2

- 1) Breed generally refers to a group of birds with the following characters:
 - Each bird looks similar to one another (similar in shape and conformation),
 - Birds hatched out from eggs produced by birds which are similar to look at (descended from common ancestry), and
 - When they are mated among themselves, produce young ones which will look exactly like parents (breed true to type).

Ex: New Hampshire, Plymouth Rock, Leghorn etc.

For easy understanding, breed refers to a group of bird that have similar body shape and conformation, they breed true to the type and are descended from common ancestry.

Within a breed, a sub-group which differ either in comb shape or plumage colour or both is referred to as “**Variety**”. You might be aware that even in rice, we have varieties like Basmati, Sona etc.

Ex: Plymouth Rock (White/Barred), Cornish (White/Red) etc.

Within a variety, another sub-group may be developed by a breeder with a specific desired characteristic is called “**Strain**”.

Ex: Babcock strain of Single comb White Leghorn.

- 2) Common egg-type chicken (strains of Single comb White Leghorn):

Babcock, Bovans, BV-300, Dekalb, ISA, Euribrid, HH-260, Hyline, Keystone, Lohmann and H & N Nick chick.

Common meat-type hybrid chicken (hybrids with White and/or Red Cornish as male line White Plymouth Rock and/or New Hampshire as the female line:

Anak-2000, Arbor Acres, Cobb, Hub chicks, Hubbard, Hybro Ross, Steggles, Lohmann, Pilch, Starbro, Marshall, Peterson, Samrat-2000 and Tegel.

Check Your Progress 3

- 1) Khaki Campbell and Indian Runner are egg type ducks. Whereas, the Aylesbury, Muscovy and Pekin are meat type ducks.
- 2) Beltsville White and Broad Breasted Brown are the two important varieties of Turkey.
- 3) Lavender, Pearl and White.