

---

# UNIT 3 EMU, GUINEA FOWL AND TURKEY FARMING

---

## Structure

- 3.0 Objectives
- 3.1 Introduction
- 3.2 Emu
  - 3.2.1 Sexing
  - 3.2.2 Housing
  - 3.2.3 Feeding
  - 3.2.4 Management
  - 3.2.5 Health Care
- 3.3 Guinea Fowl
  - 3.3.1 Sexing
  - 3.3.2 Housing
  - 3.3.3 Feeding
  - 3.3.4 Management
  - 3.3.5 Health Care
- 3.4 Turkey
  - 3.4.1 Sexing
  - 3.4.2 Breeds
  - 3.4.3 Housing
  - 3.4.4 Feeding
  - 3.4.5 Management
  - 3.4.6 Health Care
- 3.5 Let Us Sum Up
- 3.6 Glossary
- 3.7 Suggested Further Reading
- 3.8 References
- 3.9 Answers to Check Your Progress

---

## 3.0 OBJECTIVES

---

After studying this unit, you will be able to:

- explain sexing, housing and feeding of Emu, Guinea fowl and Turkey;
- demonstrate management of Emu; Guinea fowl and Turkey; and
- summarize health care of Emu, Guinea fowl and Turkey.

---

## 3.1 INTRODUCTION

---

In this Unit, some of the birds which can be reared as an alternative to chicken and duck are discussed. The emus are good runner but cannot fly, whereas the guinea fowls can fly and are very suitable birds for backyard farming. The turkeys are very popular in Western countries. They cannot fly and unless frightened, they do not

even run; they walk. Unless you have visited farms specially rearing these species, there is less likelihood of you to have seen these species. The feeding, housing, health care and management of these species are discussed in this unit.

---

## 3.2 EMU

---

The emus are classified under “Running birds” and are recently being introduced at many institutions; but not still on commercial scale. Few private farmers are rearing emus exclusively for oil and medicinal values. You might have seen in zoos; they are as tall as a human beings. On processing of an emu, you can get emu oil, quilled body, skin (hide), reptile like leg skins and low fat, low cholesterol meat. On an average, 4 to 6 litres of processed (refined) emu oil having medicinal value can be obtained from an Emu. Hide and leg skins are used for manufacturing of very high quality leather products such as boots, belts, purses, wallets, vests, jackets, money clips, bracelets, check-book covers and a number of other fashionable leather products. Feathers are also useful in production of pillows and other fancy items.



**Fig. 3.1: Emu**

The emus are totally different from chicken. They have long and strong legs with hardly any wings (Fig. 3.1). Average height of the adult is 1.5 to 1.8 meter each weighing about 40-50 kg. They have no comb or wattles or tail and wing feathers. Hence, they can run fast but cannot fly. Compared to the body size, they have smaller beaks which are more flat than those of chicken. They live up to 30 years of age. The usefulness of emu are as follows:

- Skin in leather industry.
- Fat for extracting emu oil which has medicinal value.
- Meat low in cholesterol and hence healthier than other poultry meats.
- Feathers are useful in fancy garments.
- Eggs are mainly used for hatching; otherwise, they are also low in cholesterol.

### 3.2.1 Sexing

Sex differentiation in emu is rather difficult and on most occasions, needs expert inspection. However, the following indicators can be used as a guide for sexing:

- Length of the lower leg will be less in males than females.
- In case of females, the chest region becomes darker (bluish) especially at the breeding season. In males, the darkening is as prominent as in females.
- Female make loud “booming” sound; whereas, males make a less louder grunting sound.
- The bird should be restrained and examined for accessory sex organs which require a qualified Poultry Specialist or a Veterinarian.

### 3.2.2 Housing

The emus, similar to turkey are popularly reared under semi-intensive system. The space requirements are as follows:

**Table 3.1: Space Requirements of Emu**

Age	Floor Space (m <sup>2</sup> /bird)	Feeder Space (cm/bird)	Drinker Space (cm/bird)
Brooder (hover) space	0.135	10	15
0-4 weeks	0.72	15	15
4-8 weeks	1.35	22.5	15
8-12 weeks	2.70	22.5	15
>12 weeks	5.40	22.5	15
Adult	0.04-0.12*	22.5	

\* Hectare for 2 to 4 birds

*Adapted from: Wilson et. al., 1997*

### 3.2.3 Feeding

Unlike chicken, the emu chicks do not start eating soon after hatch; you need not have to bother. This is because they will have plenty of yolk left in them which can look after the chick for the first 2 to 3 days. However, it must drink water. An adult bird consumes about 1.4 to 1.5 kg feed/day. Emu prefers pellets to mash type of feed. Different feeds used are:

- Chick starter – up to 2 to 3 months of age.
- Grower – up to 8 months of age after chick starter till breeder ration.
- Finisher – till market as meat bird; 14 to 16 months of age.
- Breeder – From 16 months onwards till completion of lay.
- Maintenance – after completion of lay till few months before the next season of lay.

### 3.2.4 Management

You have by now recognized that emus are completely different from other poultry species. Therefore, their management also will be different.

#### (i) Handling (catching)

Catching an emu is an art. Generally, emus are not aggressive; but when they are chased for catching, they can be. Males often become aggressive while protecting eggs. The best way to catch an Emu is to corner the bird with least disturbance to a corner of the fence. This can be followed by holding its two small wings. Alternatively, when it goes by, you can go behind it and catch the small wings and drag for restraining it.

## (ii) Mating

The emus will choose their mate once in their life time. Mating is seasonal, unlike chicken. Mating season depends on location of the farm. Under Indian conditions, mating generally occurs between October and the next February (winter and spring). Males do look aggressive during mating season and females make louder noise than males.

## (iii) Egg production

Males with the help of females build their nest using soft twigs, leaves etc. If a separate cubicle is made in a shaded area of the run space, it helps nest building at that location. Eggs are produced during the mating season only; unlike chicken, mating is required for egg production. Age at sexual maturity is 18 to 24 months. Each season 20-30 eggs are produced each weighing, on average, 600-750 g. Emu eggs are dark (emerald) green in colour Fig. 3.2: Emu Egg. The emu eggs contain less cholesterol per g of yolk than chicken eggs. A hen may lay an egg once in every 3 to 4 days. During mating season, males mate almost every day. Eggs should be collected as quickly as possible after it is laid. Otherwise, there is a likelihood of pecking by the hen itself or by other predators.



Fig. 3.2: Emu egg

## (iv) Incubation and Hatching

In case of emus, male sits on the eggs to hatch, if allowed for natural hatching. During this time, the female tries to find other mates. Incubation period is 47-53 days (Average 52 days). The day-old chick weighs on an average 327 g. Temperature and humidity requirements are also different: Setter 35.0 to 37.2°C with RH of 24 to 32%; Hatcher 32.2°C with RH of 40 to 50%. You may be surprised to note low RH for emu eggs. Actually, shell of emu eggs is very thick; therefore, to help evaporation of moisture, RH is less in setter than that for chicken eggs. In hatcher, RH should be sufficient enough to help drying of chicks without causing dehydration. Turning and other specifications are similar to chicken eggs.

Since eggs are dark coloured, they cannot be candled. Hence, fertility testing is done by holding the eggs after 2 to 3 weeks of incubation. If it is fertile, it holds warmth longer, whereas, infertile ones cool very fast. Alternatively, 2 weeks before the expected date of hatch, movement of the embryo can be felt by tapping the surface with a pencil. If the egg is kept on the table and tapped with a pencil, due to movement of embryo, the egg may rotate on the table itself.

### 3.2.5 Health Care

The emus are highly susceptible to encephalomyelitis. Droppings of the wild birds are the main source of infection. However, horses can also be a source of infection.

If the disease is known to exist in the area, it is better to vaccinate emus against the disease. Other poultry diseases are not common in emus.

---

### 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) Describe the characteristics of Emu eggs.

.....  
.....

2) What are the uses of emus?

.....  
.....

---

## 3.3 GUINEA FOWL

You might have noticed in some farm houses, at once you enter, some birds make a peculiar sound referred to as “Cry”. They will be even on heard from trees sometimes. They will be moving around in the compound grazing. They are so alert and make such loud sound all at once that they are considered very good and cheap substitute for watch dogs. Only drawback is they cannot chase any intruder. They are called Guinea fowls. They appear speckled in colour with bluish at the neck and bluish-green in the remaining region. They do not have comb but at that place have a projection which is more conspicuous in males called “Helmet”. They do have wattles like chicken, but appears as two distinct parts on either side. They are smaller in size and can fly easily. They occur in 3 varieties - Pearl, White and Lavender.

### 3.3.1 Sexing

Sexing is primarily by presence of large helmet in males and coarser cry it gives than females. Fig. 3.3 below gives the way a male and female Guinea fowl looks:



Fig. 3.3: Guinea Fowl – Male and Female

Source: Wikipedia

### 3.3.2 Housing

They can easily fly and therefore, when reared indoor, complete closure with mesh is essential for each of the pens (Fig. 3.4). Space requirements for Guinea fowl are tabulated (Table 3.2) below:

Table 3.2: Space requirements of Guinea fowl

Age	Floor Space (cm <sup>2</sup> /bird)	Feeder Space (cm/bird)	Drinker Space (cm/bird)
Brooder (hover) space	25-50	1.5	1.25
0-4 weeks	450	2.5	1.25
4-8 weeks	720	2.5	1.25
8-12 weeks	900	3.75	2.00
>12 weeks	1350	6.25	2.50
Adult	1350-2700	10.0	

*Adapted from: Wilson et. al., 1997*



Fig. 3.4: Indoor rearing

### 3.3.3 Feeding

As indicated already, the Guinea fowl can graze around the house. However, when reared indoor, rations available in the market for laying-type birds can be fed to Guinea fowl as well. However, if one wants to mix a separate ration, the following nutrient requirements of Guinea fowl is necessary:

Table 3.3: Nutrient Requirements of Guinea Fowl

Parameters	0 to 4 weeks (starter)	4 to 10 weeks	10 weeks to market	Layer / Breeder
Metabolizable Energy, Kcal/kg	3000	2800	2700	2900
Protein, %	25	24	18	18
Lysine, %	1.3	1.40	0.80	0.83
Methionine, %	0.52	0.47	0.30	0.55
Calcium, %	1.2	0.85	0.53	3.00
Available phosphorus, %	0.5	0.50	0.45	0.40
Riboflavin, mg/kg	3.40	3.40	3.00	4.00

### 3.3.4 Management

All managemental procedures are similar to chicken. Beak-trimming is not generally

practiced unless problems of fighting, pecking or cannibalism is recorded. Feed restriction also is not generally practiced.

**(i) Beak - trimming**

Guinea fowls are not generally beak - trimmed.

**(ii) Egg production**

The Guinea fowls are highly sensitive to light and produce 90-170 eggs per annum which are smaller (30 to 35 g) but have thicker shells than chicken eggs.

**(iii) Incubation and hatching**

While breeding, 5 females per male are allowed. Incubation period is similar to turkey (28 days; range 26 to 28 days) and eggs are transferred from setter to hatcher on 25<sup>th</sup> day of incubation. Young ones hatched are called “Keets” and their growth rate is slower than that of chicken.

**3.3.5 Health Care**

The Guinea fowls are quite hardy and do not need any specific vaccination program.

---

**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) Define helmet in guinea fowl.

.....  
.....

2) Name common varieties of guinea fowl.

.....  
.....

---

**3.4 TURKEY**

The turkey meat is a preferred meat especially during Easter and Christmas celebrations. Turkey meat is known for its low fat and low cholesterol contents and hence, it fetches higher price at the market. Turkeys differ from chicken in many ways. The main differences are as follows:

- They are generally big in size; adults of some of the breeds can weigh as much as 10 kg and above.
- Unlike chicken, they will not have combs and wattles on the head. But, both sexes have dew lap, loose skin (Fig. 3.5) under the neck similar to cattle.
- They do have long tail feathers but none of them in sickle shape. You know that in case of chicken, cocks will have long, sickle like feathers at the tail called “Sickle feathers”.
- Males are called “Toms” which will have a many tail feathers which it can spread like a fan (Fig. 3.5) to attract the females which are called “Turkey hens”.

- Sound produced by turkey (both males and females) is called “Gobbling”. In case of chicken, cocks crow and hens cackle.

### 3.4.1 Sexing

Males have caruncles (similar to pimples) on their head and neck and a snood (long loose skin running over the beak, (Fig. 3.5) which it can withdraw at will. They spread their tail feathers into a fan-like shape to attract the female during breeding. Females will not have distinct snood and caruncles will not be that extensive when compared to males (Fig. 3.6). Adult males will be considerably bigger than females.



Fig. 3.5: Turkey tom (male)



Fig. 3.6: Turkey hen

Toms will have beards, a tuft of black feathers in front of the breast region at the base of the neck. During mating season, toms circle round the hens exhibiting their snood and tail feathers and brightening the caruncles. They make loud sound (gobbling) during this process.

### 3.4.2 Breeds

Three breeds are popular viz. Broad-breasted Bronze, Broad-breasted White and Beltsville Small White. Of these, the first two, as the name suggests are big and meant primarily for meat whereas, the other one is a better egg producer. Name itself indicates their respective colour.

### 3.4.3 Housing

Due to their large size, turkeys are invariably reared on floor; either completely inside a house on deep-litter (Fig. 3.8) or on semi-intensive system (Fig. 3.7). Semi-intensive system is more common. Floor, feeder and drinker space requirements of turkey on deep-litter system are tabulated as below:

Table 3.4: Space requirements of large turkeys on deep-litter

Age	Floor Space (m <sup>2</sup> /bird)	Age	Feeder Space (cm/bird)	Age	Drinker Space (cm/bird)
Brooder (hover) space	0.003	0-1 week	3.0	0-1 week	2.5
0-4 weeks	0.135	1-2 weeks	6.25	1-4 weeks	2.5
4-8 weeks	0.180	2-4 weeks	7.5	4-8 weeks	2.5
8-12 weeks	0.270	4-8 weeks	10.0	>8 weeks	3.0
>12 weeks	0.450	>8 weeks	12.5	Adult	3.5
Adult	0.720	Adult	15.0		

Adapted from: Wilson et. al., 1997

Generally, turkeys are reared under semi-intensive system (Fig. 3.7) from 9<sup>th</sup> week onwards. Each turkey (including adults) requires a shelter area 0.1 m<sup>2</sup>/bird. Land requirements are 0.6, 1.5, 2.0 and 2.4 m<sup>2</sup>/bird during 9 to 12 weeks, 13 to 16 weeks, 16 to market and adults (breeders), respectively.



Fig. 3.7: Semi-intensive system of rearing



Fig. 3.8: Deep litter system of rearing

### 3.4.4 Feeding

Turkey chicks referred to as “Poults” have to be given special care because they do not start eating as soon as they are left under the brooder. Death due to starvation is the most common cause of mortality in poults. Second factor one has to watch is the leg weakness. Administration of vitamins in water and ensuring that they eat and drink properly, solves most of the problems. At once they cross about 4 weeks of age, they are quite hardy and easy to manage. In our country, feed exclusively for turkey is not available. For turkeys meant for meat and sold at around 16 to 20 weeks of age, broiler starter ration can be given till 8 weeks of age followed by broiler finisher ration till market. If the turkeys are meant for breeding and egg production, they can be offered layer ration after first egg is recorded at the farm.

### 3.4.5 Management

Brooding is similar to chicken and as described above special care is compulsory during brooding. Turkey, as a species, is more susceptible to cold. Therefore, brooding period can be extended till 6 to 8 weeks depending on temperature.

#### (i) Shooting the red

At 6 to 8 weeks of age, head parts (see Section 3.4.1) become bright red in males indicating the development of caruncles and snood. This is referred to as “Shooting the red”. Sexing can be done easily at this stage.

#### (ii) Beak- trimming and desnooding

The procedure is similar to that in chicken (see Unit 3 Block 2 for details) but done at 3 to 5 weeks of age. Desnooding (removal of snood) can be practiced. You may now ask, why to remove snood? In turkey, head injuries can spread a disease called Erysipelas which can be prevented by desnooding. The procedure is to cut by thumb nail or thumb pressure at hatch or by cutting it off close to head by a sharp scissors at about 3 weeks of age.

#### (iii) Wing-notching or wing clipping

This procedure is practiced in small sized turkeys which can fly. To prevent flight, wing feathers can be clipped before 2 weeks of age. This is a very simple procedure. Alternatively, a tendon crossing the centre of the outermost joint in the wing is cut at 5 to 8 weeks of age by a specialist. However, in turkeys for meat and breeding (egg production), this procedure is not advisable.

#### (iv) Egg production

All management steps are similar to chicken. The following are the modifications in practiced. Breeding turkey hens are saddled (special cover over the back) to prevent injury while mating because of heavy weight of toms. However, in heavy turkeys, mating frequency and efficiency will not be satisfactory and hence, in most farms, artificial insemination is followed. Frequency of insemination is once every 10 days. If mating is allowed, 10, 12 and 14 hens can be allowed per tom in case of large, medium and small breeds, respectively.

#### (v) Incubation and Hatching

Hatching eggs must be collected from hens tested free of Pullorum and Mycoplasma infections. Incubation of eggs is similar to chicken except that total incubation period is 28 days. Eggs are transferred from setter into the hatcher on 25<sup>th</sup> day. If the eggs are held for more than one week before setting, they have to be turned daily.



Fig. 3.9: Turkey egg

### 3.4.6 Health Care

Some important diseases of turkey are as follows:

#### (i) Bacterial diseases

The important bacterial diseases of turkey are Erysipelas, coryza and mycoplasma infections.

- (a) **Erysipelas:** Caused by *Erysipelothrix rhusiopathiae*. This disease will be generally confined within a flock. It spreads by contamination of broken skin caused due to pecking and fighting. Affected birds are droopy (drooping of heads), snood swollen, purplish and turgid. Sudden deaths may occur and birds become progressively weaker. Mortality may go up to 50%, if proper care is not taken. The disease can be easily treated by medication. Prevention is mainly by proper sanitation and disinfection routine in the farm.
- (b) **Turkey coryza:** Caused by *Alcaligenes faecalis*. It is a mild disease much similar to coryza in chicken (see Unit 5 Block 2 for details). Mortality ranges from 5 to 75%; but most deaths occur due to secondary infections by other microorganisms. The disease cannot be treated. Therefore, it is better to avoid by proper hygienic precautions.
- (c) **Mycoplasma Infections:** *Mycoplasma gallisepticum* (MG) infection is similar to that in chicken. *Mycoplasma meleagridis* (MM) and *Mycoplasma sinoviae* (MS) infection can also occur in turkeys. Both these diseases get transmitted through egg surface either by consumption of such eggs by birds or through hatchery. Hence, all turkey eggs (Fig. 3.9), especially in Western countries, are treated for MG and MM infections by dipping hatching eggs in 0.1 to 0.3% tylosin solution. However, you have to seek help of a specialist for such

procedures. In general, MM causes respiratory symptoms and MS produces infection of the joints.

**(ii) Viral diseases**

The important viral diseases of turkey are Turkey viral hepatitis and ranikhet disease.

**(a) Turkey Viral Hepatitis**

This disease is transmitted by direct and indirect contact; transmission through eggs is also suspected. The infection shows no symptoms or signs except under stress with sudden death in normal birds, reduced production, fertility and hatchability in breeder stock. Mortality is low but can reach up to 25%. The disease is normally recorded in birds less than six weeks of age. The disease can be controlled by proper management to minimize stress.

**(b) Ranikhet disease**

Disease is similar to that in chickens.

---

**Check Your Progress 3**

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

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

1) Differentiate between tom and hen turkey.

.....  
.....

2) What do you mean by “Shooting the red”?

.....  
.....

---

**3.5 LET US SUM UP**

The emus, guinea fowls and turkeys are reared only in educational institutions and some private farms. Emus have multiple uses through their meat, eggs, skin, feathers and oil; their oil, in particular, has been identified to have medicinal value. In Emu, males take care of eggs if allowed to hatch naturally. The Guinea fowls are reared either on deep-litter or let out within the compound of households. Management procedures for all these species are more or less same as chicken. Sex differentiation is easy in Guinea fowl and Turkey based on external characteristics. But, in case of Emu, careful observation and sometimes expert handling may be required. The Guinea fowls make sound (crying) together and hence can be used as cheap replacement for watch dogs. Turkey meat is specially preferred during Easter and Christmas celebrations.

---

**3.6 GLOSSARY**

- Booming** : To make a deep, resonant sound.
- Caruncles** : Pimple- like growths on the head and neck region in turkey.
- Cubicle** : An enclosed part of a large room.

<b>Desnooding</b>	: Trimming of snood.
<b>Encephalomyelitis</b>	: Swelling or Inflammation of the brain and spinal cord.
<b>Gobbling</b>	: Sound produced by turkey.
<b>Grunting</b>	: To express with a deep guttural sound.
<b>Helmet</b>	: Hard projection on the head of Guinea fowl.
<b>Intruder</b>	: A person who enters a place without permission.
<b>Keets</b>	: Young one of Guinea fowl.
<b>Poult</b>	: Young one of turkey.
<b>Quilled</b>	: The hollow stem-like main shaft of a feather. Any of the larger wing or tail feathers of a bird.
<b>Snood</b>	: Loose skin hanging downwards over the beak in turkey.
<b>Speckled</b>	: Dotted or covered with speckles, especially flecked with small spots of contrasting colour.
<b>Tom</b>	: Male turkey.
<b>Twigs</b>	: Any small, leafless branch of a woody plant.

---

### 3.7 SUGGESTED FURTHER READING

---

Ensminger, M.B. 1993. *Poultry Science*. 3<sup>rd</sup> Edition. International Book Distributing Company, Lucknow, India.

North, M.O. and Bell, D.D. 1990. *Commercial Chicken Production Manual*. AVI Publication, Van Nostrand Reinhold, New York, USA.

Sreenivasaiah, P.V. 2006. *Scientific Poultry Production* (II Edition). International Book Distributing Company, Lucknow, India.

---

### 3.8 REFERENCES

---

National Research Council. 1994. *Nutrient Requirements of Poultry*. NRC, Washington. D.C.

Wilson, H.R., Mather, F.B. and Jacob, J.P. 1997. *Poultry Management Specifications*. IFAS Extension Bulletin, Univ. of Florida, Florida, USA

---

### 3.9 ANSWERS TO CHECK YOUR PROGRESS

---

#### Check Your Progress 1

- 1) Emu egg weighs on average, 600-750 g, dark (emerald) green in colour with thick shell. Eggs are mainly used for hatching; otherwise, they are also low in cholesterol.

2) The usefulness of emu is as follows:

- Skin on the body and reptile-like skin on the legs in leather industry for manufacture of boots, belts, purses, wallets, vests, jackets, money clips, bracelets, check book covers and a number of other fashionable leather products.
- Fat for extracting emu oil which has medicinal value to treat joint problems.
- Meat low in cholesterol and hence healthier than other poultry meats.
- Feathers are useful in fancy garments and pillows.

### **Check Your Progress 2**

- 1) The guinea fowls do not have comb but at that place have a projection which is more conspicuous in males and called “Helmet”.
- 2) There are three common varieties of guinea fowls: i) Lavender ii) Pearl iii) White.

### **Check Your Progress 3**

- 1) Tom turkey has darker caruncles and drooping snood over its beak. It can withdraw the snood at its will. It also has beard made of black feathers at the base of the neck. The tail feathers will be usually spread like a fan, especially during the mating season, to attract the female. Hen turkey does not have dark caruncles, snood and beard. It does not spread its tail feathers like a fan.
- 2) At 6 to 8 weeks of age, head parts in male turkey become bright red indicating development of caruncles and snood. This is called “Shooting the red”.