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## UNIT 2 DUCK AND GEESE FARMING

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## 2.0 OBJECTIVES

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After studying this unit, you will be able to:

- explain sexing, housing and feeding of ducks and geese;
- demonstrate management of ducks and geese; and
- summarize health care of ducks and geese.

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## 2.1 INTRODUCTION

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You would have come across ducks around your neighbourhood being herded in groups toward a water source. You are already aware that the ducks and geese love water and belong to group “Water fowls”. In our country, *Desi* type of ducks are reared mainly for eggs. West Bengal is leading in duck population followed by Assam, Bihar, Manipur, Kerala, Andhra Pradesh, Tamil Nadu, Orissa, Tripura and Jammu and Kashmir. In Kolkata, about  $\frac{1}{4}$ <sup>th</sup> of number of eggs sold are duck eggs. The Central Duck Breeding Farm is functioning at Hessarghatta, Bangalore (Karnataka) from where one can obtain day-old duck chicks (ducklings). The geese are reared mainly as a hobby or fancy purposes at the backyard. It is yet to pick-up as a bird for commercial farming. Management procedures like brooding, growing, laying,

lighting, litter management, manure handling, etc. are generally similar to that of chicken. However, differences specific to the species concerned are described in this Unit.

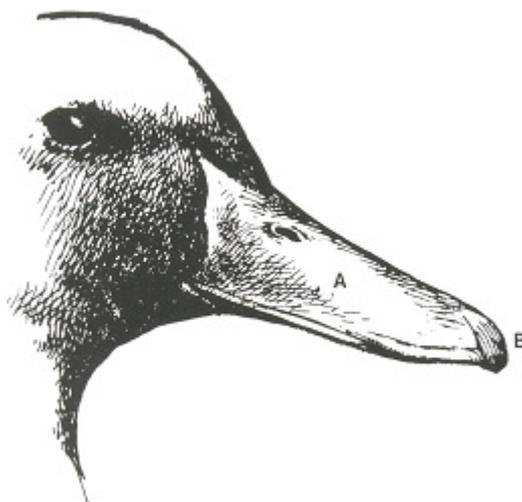
## 2.2 DUCKS

The term “Ducks” in true sense means a female; but it is used to include both the sexes. You have seen both duck and chicken. Can you list the differences in their appearance? I am sure you can. Duck meat is very rich in fat content and hence it is not in preference by many consumers. Duck meat has 11.5% protein and about 39% fat.

### 2.2.1 General Features

The main differences between duck and chicken are as follows:

- Ducks generally have a low carriage; that means their legs are short and it appears as if body is touching the ground. This aspect you should have definitely noticed. However, a breed of duck by the name “Runner” is an exception to this because it stands erect.
- The beak is flat and is called “Bill”; it has a small outgrowth at the tip which is called “Bean or Horn” (Fig. 2.1).
- Unlike chicken, they will not have combs and wattles on their head.
- Similarly, they will not have too many long tail feathers as you would see in case of chicken.
- The toes are all connected to each other by “Web” as you would have seen in case of frogs. This is to help them swim in water.
- Males are called “Drakes” which will have a curved feather at the tail region (called “Drake feather”) and the females do not have drake feather. You know that in case of chicken, the cocks will have long, sickle like feathers at the tail called “Sickle feathers”.
- Drakes belch and ducks whimper; these are the sounds made by ducks. In case of chicken, the cocks crow and the hens cackle.



A – Bill; B - Bean (Horn)

**Fig 2.1: Head of a duck**

### 2.2.2 Sexing

As indicated under general features, males have drake feather and the females do not. The sound produced also is very different. These can be distinguished at about 6 weeks of age. However, in case of Muscovy ducks, males will be considerably bigger than females.

### 2.2.3 Breeds

You will be surprised to know that a breed of duck called “Khaki Campbell” (Fig. 2.2) can produce an egg every day without a break! Ducks are grown for eggs in our country and meat varieties are not popular. However, White Pekin is a popular breed for meat. You have already studied about the details of different breeds/varieties of ducks in the previous course. Hence, only some important breeds are detailed below for refreshing you knowledge.



Fig. 2.2: Khaki Campbell

#### (i) Egg type

The most popular breed for egg production is Khaki Campbell (Fig. 2.2) which is originated in England. The drakes (males) have brownish bronze colour at lower back, tail coverts, head and neck; the remaining areas will be khaki (brown) in colour. They have green bills (bills in ducks and geese are same as beak in chicken), dark orange legs and toes. The ducks (females) have seal brown coloured head and neck with the remaining areas khaki in colour. They possess black bills, brown legs and toes. Runner breed is also known for egg production.

#### (ii) Meat type

There are many duck breeds which are good for meat. But, the most popular is White Pekin (Fig. 2.3), a Chinese breed. As the name goes, the breed is white in colour; they have orange yellow bills, yellow shanks and feet and lay white eggs. Aylesbury and Muscovy breeds are also known for meat production.



Fig. 2.3: White Pekin

## 2.2.4 Housing

Ducks excrete more water in their faeces. Therefore, it is very difficult to manage them on litter. Hence, slatted floor is preferred so that manure can be washed and floor can be dried. On concrete flooring, welded wire (1.25 cm × 1.25 cm of 8 gauge) can be fixed leaving a gap of 10 cm. After brooding (4 weeks), they are reared on welded wire (2.5 cm × 2.5 cm of 8 gauge). Where swimming facility can be provided, pond (usually made of concrete) dimensions can be 0.9 m wide, 20 to 30 cm deep and the length depending on the number of birds.

Floor, feeder and drinker space requirements of duck and geese are tabulated below:

**Table 2.1: Space Requirements of Ducks and Geese**

Age	Ducks	Geese
Floor space (m <sup>2</sup> /bird)		
Brooder (Hover) space	0.003	0.0035
0-4 weeks	0.072	0.135
4-8 weeks	0.135	0.180
8-12 weeks	0.180	0.270
>12 weeks	0.270	0.450
Adult	0.450-0.540	0.720
Feeder space (cm/bird)		
0-1 week	5.0	5.0
1-2 weeks	5.0	6.25
2-4 weeks	6.25	7.5
4-8 weeks	6.25	10.0
>8 weeks	7.5	12.5
Adult	12.5	15.0
Drinker space (cm/bird)		
0-1 week	1.75	1.75
1-4 weeks	1.75	2.5
4-8 weeks	1.75	2.5
>8 weeks	2.0	3.0
Adult	2.5	3.5
<i>Source: Wilson et. al., 1997</i>		

You can easily calculate dimensions of a house depending on the number and age of ducks with the floor space requirement from the above table. Similarly, you can estimate the number and size of feeders and drinkers required. Arrangement of feeders and drinkers is also similar to chicken.

## 2.2.5 Feeding

Ducks prefer pellets because they can easily eat them. Pellet size generally used is 0.3 cm for starter ration and 0.5 cm for other categories. For meat-type ducks, Starter, Grower and Finisher rations are given during first 2 weeks, 3 to 6 weeks and 7<sup>th</sup> week to market, respectively. For egg-type ducks, Starter, grower and layer rations are offered similar to that of chicken. Layer ration is provided one month prior to the expected onset of lay. Feed restriction is also similar to chicken. The FCR in meat-type ducks is around 3.0. Ducklings are most susceptible to Aflatoxicosis and hence it is extremely important to make sure that the feed does not contain aflatoxin. It is for this reason that groundnut cake is generally not used in duck ration. Requirements of some of the important nutrient for ducks at different ages are tabulated below:

**Table 2.2: Nutrient Requirements of Ducks**

Nutrient	0-2 weeks	3-7 weeks	Breeding
Metabolizable energy, kcal/kg	2900	3000	2900
Crude Protein, %	22	16	15
Lysine, %	0.90	0.65	0.60
Methionine, %	0.40	0.30	0.27
Calcium, %	0.65	0.60	2.75
Phosphorus, non-phytin, %	0.40	0.30	-
Sodium, %	0.15		
Vitamin A, IU/kg	2500		4000
Vitamin D <sub>3</sub> , ICU/kg	400		900
Vitamin E, mg/kg	10		
Riboflavin, mg/kg	4		

### 2.2.6 Management

Brooding is similar to chicken and ducklings do not require swimming water. If swimming is provided to the ducks, care has to be taken to regularly clean and disinfect the pond. Otherwise, stagnant water can cause diseases instead of giving comfort to ducks. However, if land is not a limitation, ducks can be reared in semi-intensive system with a night shelter. Water is a very important necessity for ducks. They cannot tolerate thirst; if ducks are exposed to heat for a long time and given cold water, it can cause death due to shock. They cannot tolerate direct sunshine soon after feeding as well. Water consumption of ducks depends on age. At 1, 4 and 8 weeks of age, they consume water at the rate of 28, 120 and 330 ml/duck/day, respectively.

#### (i) Debilling

This is similar to beak-trimming in chicken. Pecking generally begins around three weeks of age when the adult plumage begins to grow. Trimming the bill is stressful and probably causes some pain. After trimming, lower bill will be left longer than the upper one. Trimming can be done at the hatchery by cutting and cauterizing the nail of the upper bill with an electric beak trimmer. But, handling each duckling (newly hatched chick) is more stressful, bill will be quite small and it may re-grow. Hence, it may not be accurate. Therefore, trimming is done at 7 to 21 days of age; but usually performed at 4 weeks of age by using electrical beak-trimmer. The upper bill is cut at the mid-point of the nail. This procedure can be done with an electric beak-trimmer or very sharp straight scissors. At the same time, if nails are very big and sharp, they can be trimmed to reduce scratching of pen mates or risk of injury to workers.

#### (ii) Egg production

Ducks during lay can be housed in cages similar to chicken. But, the height at which feed and water are arranged is suitably reduced. Ducks do not drink from nipples. Therefore, watering channel is fixed all along the width of the cage in front above the feeding channel with a gap of 10 cm for feeding. Dimensions of the cage are the same as chicken. Due to high moisture content in faeces, high rise houses are preferable. Otherwise, concrete flooring can be laid and it has to be washed and drained every day. In management of laying-type birds, you Red already learnt that

growing birds are feed restricted. In the same way, it is desirable that ducks should be at least seven months old when they start laying eggs to avoid small eggs. For this purpose, a photoperiod of 14 hours per day is provided 3 weeks prior to the expected date of lay. Type, location and arrangement of bulbs are similar to that of chicken. Egg-type ducks reach more than 90% production within 5 weeks. Most of the eggs are laid before 7 am and hence are collected at around 7 am. Eggs are preferably washed soon after laying, fumigated and stored. For obtaining hatching eggs, 6 to 8 ducks per drake is recommended and hatching eggs are collected one month after the drakes are allowed with their mates. Nests must be clean to ensure duck eggs free from *Salmonella* which is most common with duck eggs. Number of nests required is, 30% of the number of ducks.

### (iii) Incubation and hatching

Incubation of eggs is similar to chicken excepting that a relative humidity of 75% is required throughout the period and 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.

## 2.2.7 Health Care

Ducks are not affected by Infectious bronchitis, Lymphoid leukosis, Marek's disease and other respiratory diseases. Some important diseases of ducks are as follows:

### (i) Bacterial disease

**New duck disease:** Caused by *Moraxella anatipestifer*. This is similar to Chronic Respiratory Disease (CRD) in chicken. In addition, birds lose balance and fall on sides and backs; death due to dehydration. The disease is curable with Sulfonamides and other antibiotics.

### (ii) Viral Diseases

#### (a) Duck Viral Hepatitis

This spreads very fast and those which recover continue to spread disease (carriers) for about 8 weeks. The symptoms appear within 3 or 4 days and ducklings cannot stand, keep eyes closed, can not walk properly, fall sideways, kick continuously and finally die with head drawn back. If the ducklings are less than 7 days, most of them will die. In 2 to 3 week ducklings, mortality reduces to 50% and in older birds, death generally does not occur.

Prevention is by vaccination two to three times at six weeks interval. Strict isolation during first 4-5 weeks of age is highly beneficial.

#### (b) Duck Viral Enteritis (Duck Plague)

This disease spreads by direct contact (in swimming water) as well as indirect contact with contaminated equipment. In young ducks (7 weeks) the symptoms are dehydration, weight loss, blue beaks and often a blood-stained vent. In breeder ducks, the symptoms include sudden high and persistent mortality, drop in egg production, photophobia associated with half closed sticky eyelids, loss of appetite, thirst, droopiness, nervous symptoms (ataxia), nasal discharge and loose motion (diarrhoea). Affected birds cannot move and exhibit shaking (tremors) of the head, neck and body. Birds fall with drooping head and outstretched wings. Mortality ranges between 5 to 100%, especially in young ducklings. The disease can be controlled by vaccinating ducklings over 2 weeks of age.

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### 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 Khaki Campbell duck.

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2) Explain debilling.

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3) Describe symptoms of duck viral hepatitis disease.

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## 2.3 GEESE

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As in case of ducks, the term “Geese” actually refers to a female, but, it is often used as a general term for both sexes. Geese also belong to the group of water fowls. Do you know that about 6 or 7 geese can yield 1 kg of feathers which is used for bedding and clothing. They eat grass and can live entirely on pasture. You might be of the opinion that broilers are fastest growing among poultry species; but it is not so. Geese are the fastest growing among all species of poultry reared for meat, eggs and fancy. However, the meat composition, as you have know for duck meat, is not very ideal for humans and hence, broilers are preferred. Goose meat has about 16% protein and 36% fat.

### 2.3.1 General Features

Do you know how to differentiate ducks and geese? Geese are generally bigger in size with longer neck and cylindrical (round - type) bills without bean/horn at the tip (Fig. 2.4). In fact, bills look more or less similar to beaks of chicken. Sound produced by geese is referred to as “Honking” which will be different from that of ducks. Like ducks, geese also do not have combs and wattles. In some breeds though, males will have tufts on the head.



Fig. 2.4: Geese

### 2.3.2 Sexing

Males are called “Ganders” and females “Geese”. Except in case of breed called “Pilgrim”, sex determination is by the examination of reproductive organs which is

done as follows: Goose is kept tail end away over the edge of the table or knee so that it can be readily bent downwards. After doing so, vaseline-smear index finger is inserted 1-2 cm into vent (anus/cloaca) and moved in a circular manner till the opening relaxes. Then, pressure is applied directly below and on side of the vent to expose the accessory sex organ of the gander.

In case of Pilgrim breed, colour of feathers will be darker (gray) with brown eyes in females and white or light feathers and blue eyes in case of males.

### 2.3.3 Housing

Since geese are foragers (eat grass by themselves), they are generally let out in the day for foraging and given shelter in the night. You already know this as semi-intensive system of rearing. Floor, feeder and water space requirements are already given in Table 2.1.

### 2.3.4 Feeding

As indicated already, geese can graze efficiently. However, for scientific feeding, the following requirements are recommended. Geese also prefer pellets.

**Table 2.3: Nutrient Requirements of Geese**

Nutrient	0-2 weeks	3-7 weeks	Breeding
Metabolizable Energy, kcal/kg	2900	3000	2900
Crude Protein, %	20	15	
Lysine, %	1.0	0.85	0.60
Methionine + Cystine, %	0.60	0.50	
Calcium, %	0.65	0.60	2.25
Phosphorus, non-phytin, %	0.30		
Vitamin A, IU/kg	1500		4000
Vitamin D <sub>3</sub> , ICU/kg	200		
Riboflavin, mg/kg	3.8	2.5	4.0

### 2.3.5 Management

If artificial brooding is practiced, it is similar to chicken; but goslings must be let out on the short grass as soon after hatching as possible. Litter management is very important because the faecal matter contains more moisture than chicken.

#### (i) Debilling

Geese are not debilled. Can you imagine why? It is for the simple reason that they are generally left for grazing and if you remove bills, they cannot graze.

#### (ii) Incubation and Hatching

While breeding, 5 geese per gander are allowed for at least some weeks in separate pens. Afterwards, ganders can identify their partner (mates) even when all are mixed together. Specific observation has to be made to avoid gander mating or not mating few geese which is called "Preferential mating". Number of nests required, as in case of chicken, is 30% of the number of females. If eggs are held for more than 2 days in the cold storage, they have to be turned. Incubation period is 29 to 31 days except in case of Egyptian geese which take 35 days. Artificial incubation is difficult as they require higher humidity and therefore, natural incubation under

chicken, turkey or duck is practiced. If chicken are used, they cannot turn goose eggs and hence turning has to be done manually. Sprinkling of water or dipping hatching eggs in water for 30 seconds daily during last half of incubation increases hatchability. Hatched gosling should be quickly removed to a warm place. Otherwise, the brooding goose will leave the unhatched eggs to take care of newly-hatched one.

**(iii) Geese as weeders**

Weeds are unwanted plants which affect crop productivity. Farmers use several methods to remove weeds. Geese can be employed as good weeders on crops like cotton, onions, garlic, strawberries etc. and not on cabbage or lettuce on which the geese themselves feed. For this purpose, 6 week old goslings are fed only a light feed of grain the night before to keep them hungry and let out on the field the next day morning. Sufficient shade and water must be provided all through the crop area.

**2.3.6 Health Care**

Geese are relatively free from many diseases, but are commonly affected by internal parasites. You can easily tell why so? They are let out for foraging and hence, they pick-up worm eggs. Regular deworming will help to control internal parasites.

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**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) List the distinguishing features of geese in comparison to chicken and duck.

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2) Give the terms for sound produced by both sexes of geese.

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3) How sexing is done in geese?

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**2.4 LET US SUM UP**

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Ducks and geese are water fowls. West Bengal has the maximum population of ducks in India. Both duck and goose meat are not that popular because of high fat content. They have flat bills with a horn at the tip. The body is carried at a lower level than chicken. Drakes (males) have a tail feather curled upwards called drake feather; the sound made by them is called belching and ducks (females) whimper. Ducks can be reared completely indoor without swimming water. Khaki Campbell ducks can lay as many as 365 eggs a year. They can be reared similar to laying-type chicken with changes in space allocations. Ducks for meat can be marketed at 8 weeks of age. Ducks are highly susceptible to aflatoxin and hence extreme care is necessary in feed formulation. Geese are fastest growing among the poultry species. Ever since hatched, they can forage on grass. Sound produced by both ganders

(males) and geese (females) is called honking. They are hardy and do not get most of the common poultry diseases. However, they have to be dewormed regularly. For both duck and goose eggs, additional RH is essential during incubation and hatching. Generally, 5 females are allowed with a male in both the species for obtaining hatching eggs.

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## 2.5 GLOSSARY

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<b>Bean/Horn</b>	: Growth at the tip of bill in ducks.
<b>Belching</b>	: Sound produced by drake.
<b>Bill</b>	: Beak of duck and geese.
<b>Debbling</b>	: Removal of part of bill (similar to beak-trimming).
<b>Drake feather</b>	: Tail feather curved outwards in a drake.
<b>Drake</b>	: Male of a duck.
<b>Droopiness</b>	: To bend or hang downward.
<b>Duck</b>	: Actually means female duck; but ordinarily used to mean both sexes of ducks.
<b>Gander</b>	: Male goose.
<b>Geese</b>	: Actually means female goose; but ordinarily used to mean both sexes of geese.
<b>Honking</b>	: Sound produced by geese (both male and female).
<b>Pasture</b>	: Grass or other vegetation eaten as food by grazing animals.
<b>Photophobia</b>	: An abnormal fear of light.
<b>Preferential Mating</b>	: A male mating or not mating specific females.
<b>Tufts</b>	: A bunch of feathers or hairs held together at the base.
<b>Web</b>	: A membrane connecting the toes of some water birds like duck and geese.
<b>Whimpering</b>	: Sound produced by female duck.

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## 2.6 SUGGESTED FURTHER READING

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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*, 3<sup>rd</sup> Edition. International Book Distributing Company, Lucknow, India.

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## 2.7 REFERENCES

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Ernst, R.A. and Coates, W.S. 1977. *Raising Geese*. Leaflet No. 2225, Univ. of California, Davis, USA.

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

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## 2.8 ANSWERS TO CHECK YOUR PROGRESS

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### Check Your Progress 1

- 1) Most popular breed for egg production is Khaki Campbell which is originated in England. The drakes have brownish bronze colour at lower back, tail coverts, head and neck; the remaining areas will be khaki in colour. They have green bills (bills in ducks and geese are same as beak in chicken), dark orange legs and toes. The ducks have seal brown coloured head and neck with the remaining areas khaki in colour. They possess black bills, brown legs and toes.
- 2) Debilling is similar to beak-trimming in chicken. Pecking generally begins around three weeks of age when the adult plumage begins to grow. Trimming the bill is stressful and probably causes some pain. After trimming, lower bill will be left longer than the upper one. Trimming can be done at the hatchery by cutting and cauterizing the nail of the upper bill with an electric beak trimmer. But, handling each duckling (newly hatched chick) is more stressful, bill will be quite small and it may re-grow. Hence, it may not be accurate. Therefore, trimming is done at 7 to 21 days of age; but usually performed at 4 weeks of age by using electrical beak-trimmer. The upper bill is cut at the mid-point of the nail. This procedure can be done with an electric beak-trimmer or very sharp straight scissors. At the same time, if nails are very big and sharp, they can be trimmed to reduce scratching of pen mates or risk of injury to workers.
- 3) This spreads very fast and those which recover continue to spread disease (carriers) for about 8 weeks. The symptoms appear within 3 or 4 days and ducklings cannot stand, keep eyes closed, cannot walk properly, fall sideways, kick continuously and finally die with head drawn back. If the ducklings are less than 7 days, most of them will die. In 2 to 3 weeks, ducklings mortality reduces to 50% and in older birds, death generally does not occur.

### Check Your Progress 2

- 1) The geese are water fowls and hence love water. Geese are generally bigger in size with longer neck and cylindrical (round - type) bills without bean/horn at the tip. In fact, bills look more or less similar to beaks of chicken. Sound produced by geese is referred to as "Honking" which will be different from that of ducks. Like ducks, geese also do not have combs and wattles. In some breeds though, males will have tufts on the head. They have webbed feet unlike chicken. Sexing in ducks is by observing for drake feathers in males. In case of geese, sexing has to be done by examining the accessory sex organs by handling the birds. Ducks prefer to eat pellets as are geese; but geese can forage soon after birth.
- 2) Term for sound produced by both sexes in geese is called Honking.
- 3) In geese, Vaseline smeared index finger is inserted into the vent and circular motion is given to relax the sphincter. Afterwards, a slight pressure is given to eject the sex organ in gander. In case of Pilgrim breed, colour of feather itself identifies the sex; white coloured being gander and grey coloured being the goose.