

## LESSON 14: QUAIL FARMING FOR EGGS AND MEAT

### STRUCTURE

- Quails *vis-a-vis* Chickens
- Reasons for quail farming
- Common varieties of quails by CARI
- Rearing of quails in cages
- Inputs requirement
- Summary

### LEARNING OUTCOME

After going through this lesson, you will be able to:

- Gather information on benefits and purpose of quail farming.
- Identify different breeds of quails.
- Know about various quail farms.
- Study management tips of quail farming

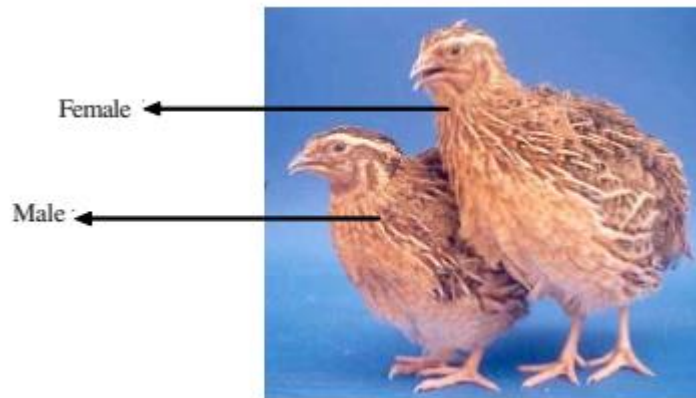
### INTRODUCTION

Japanese quails (*Coturnix coturnix Japonica*) are small flying birds weighing around 150 to 200 g. They make a peculiar sound and are considered a delicacy as a meat bird. Due to their small size, this bird is also used as a laboratory model of chicken and other birds. So, cost of conducting experiments can be greatly reduced because they eat less, need less space and reproduce faster than chicken. In addition, they are also easy to handle. With growing consumer awareness and appreciation for the quail's tender and tasty meat quality, the commercial quail production industry has gradually captured a sizeable section of the poultry meat market. In the picture below, you will see a pair of Japanese quails (Fig. 1).



**Fig. 1: Japanese Quail**

At about 3 weeks of age, the adult male is identified by cinnamon-coloured feathers, blunt and smaller feathers on the upper throat and lower breast region. The females in the same region will have black stippled feathers on lighter cinnamon colour and the feathers are pointed in shape. The male makes a loud voice which usually sounds as “ko-turro-neex”. You will be surprised to know that the males weigh less (160 g) than the females (200 g) at 8 weeks (Fig. 2).



**Fig. 2: Japanese Quail Male and Female birds**

### **QUAILS VIS-A-VIS CHICKENS**

There are many types of quails like the Chinese quail, Italian quail, Rain quail etc., but not all are domesticated. Most of the quails come under Wildlife Protection Act. Only the Japanese quails and the Bob white quail are allowed to be reared under captivity. In India, we have the Japanese quails which are gaining much importance and their eggs and meat are readily accepted by the common man. Quails are also distinctly different from chicken because:

- They are very small compared to chicks; adults weigh about 10% of adult chicken.
- They do not have combs and wattles
- They can fly
- Quails get sexually matured by 6<sup>th</sup> week of age itself against 6<sup>th</sup> month
- Quails eat 20-25 g feed *vis-a-vis* 100-120 g feed in layer chicken

### **REASONS FOR QUAIL FARMING**

There are various advantageous in raising Japanese quails. The reasons for the popularity of Japanese quail farming are as follows:

- Does not require specially designed house as they can be comfortably reared even in vacant rooms meant for human habitation.

- The floor space requirement is much less, and the capital requirement therefore is much less.
- The quails are ready for the market as table birds at five weeks of age. The quail also starts laying from the sixth week.
- More resistant to diseases than chicken and do not normally require any vaccination, deworming, etc. such that their management is easier.
- Because of their smaller body size, the quails consume less feed and therefore maintenance and recurring costs are also less.



Thus, the Japanese quail farming can be undertaken with less capital investment and little skill, and the returns will be realized earlier.





### Distribution of Quail Farming

With growing consumer awareness, an appreciation for the quails' tender and tasty meat quality has been reported. Many commercial quail farms for egg and meat production have been established in different parts of the country.

### BREEDS OF QUAILS

There are many types of quails like the Chinese quail, Rain quail, Italian quail. But not all are domesticated. **Most of the quails come under Wildlife Protection Act.** Only the Japanese quails and the Bob White quails are allowed to be reared under captivity.

<p><b>Egg Type CARI Pearl (White Egger)</b></p> <ul style="list-style-type: none"> <li>• Body Weight (5<sup>th</sup> week): 140 g</li> <li>• Daily feed: 20-25 g</li> <li>• Age at 50% Egg Production: 8 weeks</li> <li>• Age at 80% Egg Production: 10 weeks</li> <li>• Hen day production: 285-295 eggs</li> </ul>	 <p>Fig. 3: CARI Pearl</p>
<p><b>CARI Sunehari (Brown Feather White Breasted)</b></p> <ul style="list-style-type: none"> <li>• Body Weight (straight-run) 5<sup>th</sup> week: 182 g</li> <li>• Age at sex maturity: 43 days</li> <li>• FCR (5<sup>th</sup> week): 2.8</li> <li>• Av. egg weight: 11 g</li> <li>• Age at 50% Egg Production: 8 weeks</li> <li>• Age at peak EP: 12-13 weeks</li> </ul>	 <p>Fig. 4: CARI Sunehari</p>

<p><b>CARI BROWN (Brown Feathered Quail)</b></p> <ul style="list-style-type: none"> <li>• Body Weight (5<sup>th</sup> week): 180-185 g</li> <li>• Age at sexual maturity: 38-41days</li> <li>• Hatchability on total egg set: 60-65%</li> <li>• Plumage colour: Completely brown</li> </ul>	 <p><b>Fig. 5: CARI Brown</b></p>
<p><b>CARI Sweta (White Feathered Quail)</b></p> <ul style="list-style-type: none"> <li>• Body Weight (5<sup>th</sup> week): 155-165 g</li> <li>• Daily feed intake: 25 g</li> <li>• FCR (5<sup>th</sup> week): 2.70</li> <li>• Hatchability on total egg set: 50-60%</li> </ul>	 <p><b>Fig. 6: CARI Sweta</b></p>
<p><b>CARI Ujjawal (White Breasted Quail)</b></p> <ul style="list-style-type: none"> <li>• Body weight (5<sup>th</sup> weeks): 175 g</li> <li>• FCR (5<sup>th</sup> week): 2.80</li> <li>• Daily feed: 25-28 g</li> <li>• Hatchability on total egg set: 65%</li> </ul>	 <p><b>Fig. 7: CARI Ujjawal</b></p>
<p><b>Meat Type CARI Uttam (Quail Broiler)</b></p> <ul style="list-style-type: none"> <li>• Body weight (5<sup>th</sup> weeks): 240 g</li> <li>• Daily feed: 25-28 g</li> <li>• FCR (5<sup>th</sup> week): 2.60</li> <li>• Hatchability on total egg set: 70-75%</li> </ul>	 <p><b>Fig. 8: CARI Uttam</b></p>

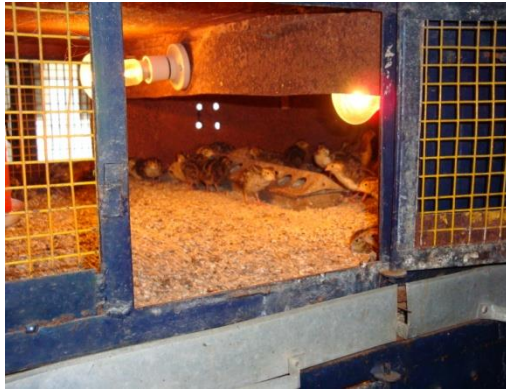
## REARING OF QUAILS IN CAGES

In most of the cases, the quails are reared in intensive system either on the floor or in cages, as the quails unlike chickens can fly and their rearing in free range system is not practically possible.

### Housing

The Japanese quails can be reared on the floor or in specifically designed cages. Battery brooders are used to rear up to 3 weeks of age; later on shifted to growing cages in which many growing birds are grown in each cage called as colony or community cages. At 8 weeks of age, they are shifted to laying cages. The cage design is similar to chicken, but smaller in size. The battery brooder (Fig. 9) consists of tiers each measuring 160 cm x 80 cm with a height of 25 cm which can accommodate 60 to 75 quail chicks. The colony growing cages will not have brooding area, but have tiers of the same dimensions as that of brooder cage.

Each such tier can accommodate 80 to 100 growers. Three-bird laying cages (Fig. 10) measures 25 cm wide and 15 cm in depth and height. Egg rolling space is 2.5 to 3.0 cm. The colony laying cages are similar in dimensions to colony growing cages but they will have slope in the floor with an egg rolling space of 2.5 to 3.0 cm. Each of these tiers can accommodate 80 to 100 hens.



**Fig. 9: Quail Chicks in battery brooder**



**Fig. 10: Cage system of rearing**

Space requirements of Japanese quail are tabulated below:

**Space requirements of Japanese quail**

Age (weeks)	Floor space (cm <sup>2</sup> /bird)	Feeder space (cm/bird)	Drinker space (cm/bird)
Up to 2	75	2.0	1.0
3 to 5	100	3.5	2.0
6 to 8	125	5.0	2.5
9 and above	150	7.0	4.0

**Feeding**

Quail rations are available wherever they are being reared on commercial purposes. Their nutrient requirements are as follows:

**Nutrient requirements of Japanese quail**

Parameters	Starter/Grower (0-6 weeks)	Breeder/Layer (6 weeks onwards)
Metabolizable energy, Kcal/kg	2900	2900
Protein, %	24.0	20.0
Lysine, %	1.30	1.00
Methionine, %	0.50	0.45

Calcium, %	0.80	2.50
Available phosphorus, %	0.30	0.35
Vitamin A, IU/kg	1650	3300
Vitamin D, ICU/kg	750	900
Vitamin E, mg/kg	12	25
Riboflavin, mg/kg	4	4
<i>Source: NRC, 1994</i>		

During egg production, the feed consumed is 25 to 28 g/bird/day and during maximum production period, feed conversion ratio can be 3.3.

### Management

You should know that Japanese quail chicks at hatch will only weigh 6 g and therefore, extreme care is necessary while brooding. You will be surprised to know that even if a chick falls from a tier on to the ground, it may die.

#### (i) Brooding Chicks on Floor

Newly hatched chicks are small and require proper brooding management.



**Fig. 11: Brooding of quail chicks on floor**

Japanese quail chicks are purchased as day-old chicks, reared up to the age of five weeks, and sold to the market for meat. Litter material like paddy husks or groundnut hulls is spread to about 2.5 cm depth, and empty gunny cloth or a corrugated sheet is spread over it. A brooder guard in the form of a cardboard sheet or metallic sheet about 20 cm height is arranged in a circle over the gunny sheet on the litter material. Adequate warmth must therefore be ensured by the provision of electric bulbs at the centre of the brooder guard arrangement, or by coal-stove heating or gas brooding. In a brooder guard circle of 3 feet diameter (90 cm), about 150 chicks can be accommodated. Drinkers and feeders should not be kept under the source of heat inside the brooder circle (Fig. 11). A drinker space of about 0.3 cm, and a feeder space of 0.6 cm per bird, must be provided during 0-2 weeks. Up to two weeks, two chick drinkers

of 10 cm diameter and 1.5 cm high on the sides, each of 500 ml capacity, and two feeder plates of 22 cm diameter and 2 cm high will be sufficient for 150 chicks in each brooder circle.

**(ii) Rearing Growers**

From three weeks up to 5<sup>th</sup> week of age onwards these birds are known as growers. During this period, the birds are much stronger and are able to withstand stress. During this period, if the outside temperature is comfortable, then, the brooding bulbs may be removed. The drinker and feeder space should be increased to 0.6 and 1.2 cm, respectively from 3-5 weeks of age. From the third week, a linear feeder, 45 cm long, 2.5 cm height and 10 cm wide, and a drinker of 15 cm diameter and 2.5 cm high at the brim and 1200 ml capacity will be sufficient for 75 quail chicks. The feeders have to be designed in such a way that these birds will not be able to place their feet inside and waste feed. The protein levels in the feed are lowered during this period to 20-22% from 26%. It is essential to manage these birds well to obtain a good body weight.

**(iii) Cage Rearing**

Two differently designed types of cages are required to rear Japanese quail chicks up to market age. A brooder cage is required to rear them from day-old to 17-18 days of age and a grower cage from 18-19 days to market age. The cages are designed as multi-tier cages with about a 10 cm gap between each tier, and a droppings tray fitted into the gap (Fig. 12). Each tier can be further divided into smaller compartments. A brooder cage can be constructed as four or five tiers of 180 x 120 x 25 cm, and each tier can be divided into four compartments of 90 x 60 cm size each. About 100 chicks can be reared in each compartment, and 400 chicks in each tier. Provision must be made for heating bulbs in the centre of each compartment (Fig. 4.7). The grower cage can be 240 x 120 x 25 cm size, with each tier divided into four compartments of 120 x 60 cm size each. About 60 grower quails can be reared in each compartment up to market size. Feeders and drinkers are fixed outside the cage units. Feeding is done three times a day and watering twice daily without limiting the intake. Japanese quail chicks should not be left without feed or water at any time of the day. This will affect their growth rate and increase the mortality rate.



**Fig. 12: Rearing of Quails in Cages**

**(iv) Rearing of Layer Quails**

The layer quail can either be raised in cages or on floor. If the birds are raised in cages, then you could have tiered cages or Californian type cages (Fig. 13). Each bird must be provided with 180 cm<sup>2</sup> space. The waterers may be fitted outside the cages or nipple waterers (automatic waterer) may be fitted in the cages. In a layer cage, the floor of the cage must have a slight gradient to enable the egg laid to roll out of the cage and to be held by a folded sleeve that extends out of the cage by about 2.5 inches. Japanese quail requires 14-18 hours of light per day to maintain maximum egg production.



**Fig. 13: Layer Quails in Cage**

**(v) Egg production**

Japanese quails mature by 8 weeks of age and peak egg production is attained by 13-15 weeks of age. They produce eggs which are about 8% of their body weight; whereas, in chicken, it is about 3.5 % of body weight. Most of the eggs are laid between 3 pm to 8 pm.



The eggs weigh around 10 g and are highly mottled (dark colours of different shades and shapes on the shell). The Japanese quail egg has a mosaic pattern egg shell (Fig. 14) and the egg shell is very thin, therefore care has to be taken while collecting and storing these eggs. However, there is a white egg producing line developed. As the bird gets older, the egg size also increases. The eggs have to be collected at least thrice a day.



**Fig. 14: Quail Eggs**

#### **(vi) Beak-trimming**

Procedure is similar to chicken; done at 3 weeks of age. More care is required because the birds are small and handling is more difficult than chicken. Beak trimming is particularly important because while mating males are likely to cause severe injury to females.

#### **Health Care**

Japanese quails are also hardy; but they are susceptible to diseases such as Ranikhet disease, Infectious Bursal disease, *E. coli* infections etc. They can be controlled on the same lines as explained for chicken. Sanitary management is the best guarantee against disease by providing clean potable water, prevention of overcrowding and placing birds in a well ventilated place. Japanese quails are comparatively more resistant to infectious diseases than chicken. Fowl cholera, coli-bacillosis, enteritis and mycotoxicosis are some diseases that affect Japanese quail. However, more deaths (even up to 20-25 per cent) occur during the brooding age (0-14 days) due to managerial errors, especially failure to provide adequate warmth, the entry of chill air, too many chicks in one brooder unit, improper drinkers, etc. If adequate care is taken, the mortality rate up to market age can be restricted to 8-10 per cent.

#### **INPUTS REQUIREMENT**

- Finance
- Land
- Electricity
- Water
- Building/Houses

- Chicks/Brooders
- Cages
- Feeders
- Waterers
- Feed
- Medicines
- Vaccines
- Transportation
- Manpower
- Know-how
- Shelter for staff
- Security
- Store House/Freeze

## **SUMMARY**

- Quails are reared for hatching eggs, day-old chicks, table eggs and meat purposes.
- Several improved varieties of Japanese quails have been developed by ICAR-CARI.
- Many commercial quail farms have been established throughout the country, both for egg and meat production.

## **WEB RESOURCES**

[http://agritech.tnau.ac.in/farm\\_enterprises/Farm%20enterprises\\_%20quail%20farming.html](http://agritech.tnau.ac.in/farm_enterprises/Farm%20enterprises_%20quail%20farming.html)

<http://vikaspedia.in/agriculture/poultry/quail-farming>

<http://www.krishisewa.com/articles/livestock/416-quail-farming.html>

<http://www.agrifarming.in/quail-farming/>

<http://www.elearnvet.net/moodle/mod/resource/view.php?id=8437>

[http://www.elearnvet.net/moodle/file.php/32/Articulate/12.Brooding\\_and\\_rearing\\_practices\\_f or\\_Japanese\\_quail/player.html](http://www.elearnvet.net/moodle/file.php/32/Articulate/12.Brooding_and_rearing_practices_f or_Japanese_quail/player.html)

<http://ecoursesonline.iasri.res.in/mod/page/view.php?id=129895>

<https://www.youtube.com/watch?v=VWCebh69Sgq>

<https://www.youtube.com/watch?v=7mBtxv4Z8v8>

<https://www.youtube.com/watch?v=vn5jtiw1pXg>

<https://www.youtube.com/watch?v=YHLNpURnzVc>

