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DUCK - MANAGEMENT GUIDE

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CENTRAL POULTRY DEVELOPMENT ORGANISATION
(SOUTHERN REGION)
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Ducks occupy an important position next to chicken farming in India. They form about 10% of the total poultry population and contribute about 6-7% of total eggs produced in the country. Ducks are mostly concentrated in the Eastern and Southern States of the country mainly coastal region with non-descriptive indigenous stocks, which however are poor layers. Central Duck Breeding Farm under Ministry of Agriculture, Government of India was established in the year 1981 during the 5th Five Year plan with technical collaboration of Government of United Kingdom in order to introduce high yielding variety of ducks for the benefit of farming community.

This farm had also imported meat variety ducklings (VIGOVA SUPER-M) from Vietnam under bilateral program between Government of India and Vietnam during the year 1996.

ACTIVITIES

1. To supply good quality hatching eggs & day – old ducklings of egg and meat type strain
2. To replenish the foundation stock of State Duck Farms.
3. To serve as centre for training in Duck Production and Management.
4. To introduce low input Technology birds and upgradation by exotic blood under scavenging system.

MANAGEMENT GUIDE ON DUCKS

Duck farming has following advantages:-

1. Ducks lay more egg per bird per year than chicken.

2. The size of the duck egg is larger than hen egg by about 15 to 20 gms.

3. Ducks require lesser attention and thrive well in scavenging conditions.

4. Ducks supplements their feed by foraging. They eat fallen grains in paddy fields, insects, snails, earthworms, small fishes and other aquatic materials.

5. From commercial point of view, ducks have a longer profitable life. They lay well even in second year.

6. Ducks do not require any elaborate houses like chicken

7. Ducks are quite hardy, more easily brooded and more resistant to common avian diseases.

8. Marshy river side, wet land and barren moors upon which chicken or no other type of stock will flourish, are excellent quarters for duck farming.

9. Ducks lay 95 – 98% of their eggs in the morning before 9.00 AM. Thus saving lot of time and labour.

10. Ducks are suitable for integrated farming systems such as duck-cum-fish farming, duck farming with rice cultivation. In duck-cum-fish farming the droppings of ducks serve as feed for the fishes and no other feed or manuring of the pond is necessary for fishes (200-300 ducks per hectare of waste area). Under integrated duck farming with rice cultivation, the ducks perform four essential functions viz., intertillage as they search for food, their bills loosen up the soil around the rice plants-weeding, insect control and manuring.

11. Ducks are good exterminators of potato beetles, grasshoppers, snails and slugs. In areas plagued liver flukes, ducks can help correct the problem (2 to 6 ducks per 0.405 hectare of land). Ducks can be used to free the bodies of water from mosquito pupae and larvae (6 to 10 ducks per 0.405 hectare of water surface)

12. Ducks are quite intelligent, can be tamed easily, and trained to go to ponds and come back in the evening of their own.

BREEDS

Among the egg laying breeds, Khaki Campbell is the best producer. Individual egg production of almost an egg a day in this breed for well over twelve months has been recorded and flock averages in excess of 300 eggs per duck per year are not uncommon. Khaki Campbell ducks weigh about 2 to 2.2 Kgs, and drakes 2.2 to 2.4 Kgs. Egg size varies from 65 to 75 gms.

White Pekin is the most popular duck in the world known for table purpose. It is fast growing and has low feed consumption with fine quality of meat. It attains about 2.2 to 2.5 Kgs of body weight in 42 days of age, with a feed conversion ratio of 1:2.3 to 2.7 Kgs.

INCUBATION

The incubation period of Khaki Campbell duck is 28 days. In forced draft incubators satisfactory results are attained at a temperature of 37.5 to 37.2^{o} C (99.5 to 99^{o} F). The wet-bulb reading on the thermometer should be 30 to 31^{o}C (86 to 88^{o}F) during incubation for the first 25 days and 32.7 to 33.8^{o}C (90 to 92^{o}F) for the last three days of hatching. Eggs are sprinkled with lukewarm water having sanitizer once a day from 2nd day to 25th day and cooled for a maximum period of half an hour. Candling is done on 7th day. The eggs are turned hourly. Eggs are transferred to hatcher on 25th day.

BROODING (0-4 Weeks)

The brooding period of Khaki Campbell ducklings is 3 to 4 weeks. For meat type ducklings such as Pekin, brooding for 2 to 3 weeks is sufficient. Provide hover space of 90 to 100 sq.cms. per ducklings under the brooder. A temperature of 29 to 32^{o} C (85 to 90^{o}C) is maintained during the first week. It is reduced by about 3oC per week till it reaches 24^{o}C (75^{o}F) during the fourth week.

Ducklings may be brooded in wire floor, litter or batteries. A wire floor space of 0.046m^{2} (1/2 sq, ft.) per bird or solid floor space of 0.093 m^{2} (1 sq.ft.) per bird would be sufficient up to 3 weeks of age. Water in the drinkers should be 5 to 7.5 cm (2 to 3") deep just sufficient to drink and not dip themselves.

REARING (15-16 Weeks)

Ducklings may be reared in intensive, semi-intensive or range system. Under intensive system, allow a floor space of 0.279m^{2} (3 sq.ft.) up to 16 weeks of age. Under semi-intensive system, a floor space of 0.186 to 0.279m^{2} (2$^{1/2}$ to 3 sq.ft) per bird is allowed in night shelter and 0.929 to 1.394 m^{2} (10 to 15 sq.ft.) as outside run per bird upto the age of 16 weeks. Usually ducklings are allowed to move to runs at the end of 3 to 4 weeks of age depending upon weather. Water in the drinkers should be 12.5 to 15 cm (5" to 6") deep to allow minimum immersion of their heads. Partitions upto the height of 60-90cm (2 -3") inside the pens and the outside runs are adequate for control.

Under range system a flock of 1000 can be reared per 0.405 hectare (one acre).

ADULT STOCK (above 17 weeks of age)

Under intensive system, a floor space of 0.371 to 0.465* (4 to 5 sq.ft.) per duck is essential, whereas in semi-intensive system, a floor space of 0.279m^{2} (3 sq.ft.) in the night shelter and 0.929 to 1.394m^{2} (10 to 15 sq.ft.) as outside run bird would be adequate. For wet mash feeding in a 'V' shaped feeder, allow 10 to 12.5 cm. (4 to 5") feeding space per duck but for dry mash or pellet feeding adlib in hoppers, a feeding space of 5 to 7.5 cm.(2 to 3") per duck would be sufficient.

High egg laying strains of ducks come into production at 16 to 18 weeks of age. About 95 to 98% of eggs are laid by 9.00AM. One nest box of size 30x 30 x 45 cms.(12 x12 x18") to every three ducks be provided. In case of laying breeds a mating ratio of 1 drake to 6-7 ducks and in table breeds 1 drake to 4-5 ducks is allowed. Photo period of 14 to 16 hours per day is essentia for optimum production.

In free range, 1000 ducks are kept per 0.405 hectare (1 acre) depending upon greens.

HOUSING

Ducks do not require elaborate houses. The house should be well ventilated, dry and rat proof. The roof may be of shed type, gable or half round. It may have solid or wire floors. The wire floors are not popular with breeders.

Under semi-intensive system the house should have easy access to outside run as the ducks prefer to be outdoors during the day time and even during winter or rains. Generally the proportion of night shelter to outside run is 1/4:3/4. The run should gently slope away from the houses to provide drainage. Normally a continuous water channel of size 50cm. (20") wide and 15-20cms. (6-8") deep is constructed at the far end, on both sides, parallel to the night shelter, in the rearing or layer house.

WATER

Though duck is a water fowl and very fond of water, WATER FOR SWIMMING IS NOT ESSENTIAL AT ANY STAGE OF DUCK REARING. However, water in drinkers should be sufficiently deep to allow the immersion of their heads and not themselves. If they cannot do this, their eyes seem to get scaly and crusty and in extreme cases, blindness may follow. In addition, they also like to clean their bills periodically and wash them to clear off the feed. While in meat strains a slight increase in body weight of ducks at seven weeks of age has been noticed (weight advantage of swimming ducks to non-swimming ducks is 0.3%), but for egg laying strains, swimming is a disadvantage.

FEEDING

Ducks may be grown on dry mash, a combination of dry and wet mash or pellets. Ducks prefer wet mash due to difficulties in swallowing dry mash. The pellet feeding, though slightly costly, has distinct advantages such as saving in amount of feed, minimum wastages, saving in lobour, convenience and improvement in sanitary conditions. Ducks are good foragers. The use of range, pond or supplementary green feed, reduces the feed cost.

DUCKS SHOULD NEVER HAVE ACCESS TO FEED WITHOUT WATER. During the first eight weeks, birds should always have access to feed, but later on they may be fed twice a day i.e. first in the morning and then late afternoon. Khaki Campbell duck consumes about 12.5 Kgs. of feed upto 20 weeks of age. Afterwards the consumption varies from 120 gms and above per bird per day and depending upon the rate of production and availability of greens.

Suggested nutrient requirements for layer and broiler ducks, feed scale for Khaki Campbell duck, average live weight and feed consumption of broiler ducks and feed formulae followed at Duck Farm of CPDO (SR) are furnished.

TABLE: 1

SUGGESTED NUTRIENT REQUIREMENTS FOR EGG AND MEAT TYPE DUCK

Characteristic	Starter Duck	Grower Duck	Layer Duck	Broiler Starter Duck	Broiler Finisher Duck
Moisture, % (Max.)	11.00	11.00	11.00	11.00	11.00
Crude Protein, % (Min.)	20.00	16.00	18.00	23.00	20.00
Crude fibre, % (Max.)	7.00	8.00	8.00	6.00	6.00
Acid insoluble ash, % (Max.)	4.00	4.00	4.00	3.00	3.00
Salt, % (Max.)	0.60	0.60	0.60	0.60	0.60
Calcium, % (Min.)	1.00	1.00	3.00	1.20	1.20
Phosphorous (Available), % (Min.)	0.50	0.50	0.50	0.50	0.50
Linoleic Acid, % (Min.)	1.00	1.00	1.00	1.00	1.00
Lysine, % (Min.)	0.90	0.60	0.65	1.20	1.00
Methionine, % (Min.)	0.30	0.25	0.30	0.50	0.35
Meth. +cystine, %	0.60	0.50	0.55	0.90	0.70
Metabolizable Energy (Kcal/Kg) Min.	2600	2500	2600	2800	2900
Minerals and Vitamins:					
1 Manganese, mg/kg	90.00	50.00	55.00	90.00	90.00
2 Iodine, mg/kg	1.00	1.00	1.00	1.00	1.00
3 Iron, mg/kg	120.00	90.00	75.00	120.00	120.00
4 Zinc, mg/kg	60.00	50.00	75.00	60.00	60.00
5 Copper, mg/kg	12.00	9.00	9.00	12.00	120.00
6 Vitamin A, IU/Kg	6000	6000	6000	6000	6000
7 Vitamin D3, IU/Kg	600	600	1200	600	600
8 Thiamin, mg/kg	5.00	3.00	3.00	5.00	5.00
9 Riboflavin, mg/kg	6.00	5.00	5.00	6.00	6.00
10 Pantothenic acid, mg/kg	15.00	15.00	15.00	15.00	15.00
11 Nicotinic Acid, mg/kg	70.00	60.00	60.00	70.00	70.00
12 Biotin, mg/kg	0.20	0.15	0.15	0.20	0.20
13 Vitamin B12, mg/kg	0.015	0.10	0.10	0.015	0.015
14 Folic Acid, mg/kg	1.00	0.50	0.50	1.00	1.00
15 Choline, mg/kg	1300	900	800	1400	1000
16 Vitamin E, mg/kg	15.00	10.00	10.00	15.00	15.00
17 Vitamin k, mg/kg	1.00	1.00	1.00	1.00	1.00
18 Pyridoxine, mg/kg	5.00	5.00	5.00	5.00	5.00

Note: 1. BIS 1992 requirements for poultry feeds was taken as a guide.
2. Niacin requirements for ducks are higher than chicken.

TABLE:2

FEED SCALE FOR KHAKI CAMPBELL DUCK

Age (Weeks)	**Feed consumption/ bird/week/Kgs.**	**Age (Weeks)**	**Feed consumption/ bird/week/Kgs.**
1	0.115	13	0.595
2	0.255	14	0.605
3	0.425	15	0.630
4	0.620	16	0.705
Total	**1.415**	**Total**	**2.535**
		Progressive total	**9.945**
5	0.720	17	0.615
6	0.770	18	0.655
7	0.785	19	0.665
8	0.790	20	0.745
Total	**3.065**	**Total**	**2.680**
Progressive Total	**4.480**	**Progressive Total**	**12.625**
9	0.690	21	0.775
10	0.730	22	0.945
11	0.755	23	0.950
12	0.755	24	0.955
Total	**2.930**	**Total**	**3.625**
Progressive Total	**7.410**		
		Progressive Total	**16.250**

From 24 weeks onwards feed consumption varies from 120-130 gms and above per bird per day, depending upon the rate of production.

TABLE – 3

AVERAGE BODY WEIGHT AND FEED CONSUMPTION OF BROILER DUCKS AT 6 WEEKS OF AGE

Age (Weeks)	Body Weight (Weeks)	Feed Consumption	
		Weekly (Kgs.)	Cumulative (Kgs.)
1.	0.183	0.143	0.143
2.	0.526	0.540	0.683
3.	1.048	1.011	1.694
4.	1.533	1.272	2.966
5.	2.082	1.423	4.389
6.	2.498	1.358	5.747

TABLE: 4

FEED FORMULAE FOR DUCKS FOLLOWED AT C.P.D.O.(SR)

INGREDIENTS (%)	KHAKI CAMPBELL			WHITE BROILER DUCKS		
	Starter	Grower	Layer	Starter	Grower	Layer
WHEAT	45	48	42	60	40	40
YELLOW MAIZE	-	-	10	-	29	20
D.O.R.B.	14	25.5	6.5	-	10	-
SOYABEAN MEAL	25	15	20	25	10	20
FISH MEAL	10	6	10	10	6	10
LUCERN LEAF MEAL	2	2	2	2	2	2
MINERAL MIXTURE	2.5	2.5	2.5	2.5	2.5	2.5
SHELL GRIT	-	-	5.5	-	-	5
D.C.P.	1.0	0.5	1.0	-	-	-
VITAMIN MIXTURE	0.5	0.5	0.5	0.5	0.5	0.5
TOTAL	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
VITAMIN MIX. IN GMS.						
VITAMIN AB2D3K	25	25	30	25	25	30
VITAMIN B+E	25	25	30	25	25	30
NIACINAMIDE	5	5	5	5	5	5
CHOLINE CHLORIDE	50	50	50	50	50	50
ANTIBIOTIC	50	50	50	50	50	50
A.P.F. – 100	20	20	20	20	20	20
U.T.T.P.	20	20	20	20	20	20
TOTAL	**195**	**195**	**205**	**195**	**195**	**205**

Filler material(ground wheat/ maize).

Maize should be free from aflatoxin.

CATCHNING AND HANDLING

While handling ducks, they should be caught by neck and not on the side of the body as this might lead to sudden death.

HEALTH COVER

A. Means of disease spread through:

1. Wet litter.
2. Feed and water.
3. Close contact.
4. Contaminated equipment.
5. Attendants and visitors.
6. Air.
7. External parasites.
8. Free moving birds.
9. Rodents and flies.

B. General Principles for Prevention of Diseases.

1. Procure day old ducklings from disease free flock.
2. Maintain proper hygienic conditions.
3. Provide adequate feed, water and floor space etc.
4. Rodents and wild birds etc should be prevented to enter the houses.
5. Follow regular vaccination schedule.
6. Proper disposal of dead birds.
7. Footbaths should be provided at the entrance of each shed.
8. Reduce stress effect.
9. Ensure clean and adequate water supply.
10. Use of suitable litter material and periodical turning is essential to keep it dry.

C. What to be done at the time of an out break

1. Restrict the movement of ducks (selling and buying)
2. Follow strict hygienic measures.
3. Take help of Veterinarians.

VACCINATION SCHEDULE

NAME OF THE VACCINE	ROUTE	DOSE	AGE OF DUCKS
1. DUCK CHOLERA (PASTEURELLOSIS)	SUBCUTANEOUS DUCKLINGS	1 ml.	3-4 weeks
	ADULTS	2 ml.	After 1 month of last Vaccination
2. DUCK PLAGUE	SUBCUTANEOUS ADULTS	1 ml.	8-12 weeks.

VACCINE CAN BE OBTAINED FROM:-

1. Director, Institute of veterinary Preventive Medicine, Ranipet, Vellore District, Tamil Nadu State (Duck Plague).
2. Director, Institute of Animal health and Veterinary Biologicals, No. 37, Balgachia Road, Kolkata – 700 037 (Duck Plague).
3. Director, Institute of Animal health and Veterinary Biologicals, Hebbal, Bangalore – 560024 (Duck Plague).

DO'S AND DON'TS IN VACCINATION

1. Obtain the vaccine only from the reputed manufacturer.
2. Store the vaccine in refrigeration till use.
3. Administer only proper dose as recommended by the manufacturer.
4. Vaccine should be used within 3-4 hours after dilution.
5. Don't use the vaccine after expiry date.
6. At the time of vaccination, use only sterilized syringes and needles.
7. Vaccinate the birds during cooler parts of the day.

IMPORTANT DISEASES OF DUCKS

Ducks are resistant to common avian diseases. Duck diseases are similar to those of chicken and some are common for both, but the course of disease may vary. Since certain infections of chicken may be transmitted to ducks, it is essential that there is strict segregation of different species.

SOME OF THE COMMON DISEASES ARE:-

DUCK PLAGUE: Adult birds are mostly affected by virus disease. It is characterized by vascular damage with tissue haemorrhages and free blood in body cavities. The lumina of intestine and gizzard are filled with blood. There is no treatment for the disease. The birds can be protected by Duck Plague Vaccine, available in the country, which is given at the age of 8-12 weeks.

Prevention: By Vaccination.
Treatment: No treatment for viral diseases, prevent secondary infection.

DUCK VIRAL HEPATITIS

It mainly affects ducklings of 2 to 3 weeks of age. It is characterized by an acute course and primarily hepatitis. There is no treatment for the disease. The breeding stock can be immunized by attenuated strain of virus before the commencement of egg production. The day old ducklings can be protected with attenuated virus vaccine. The disease is not stated to be prevalent in India.

DUCK CHOLERA

It is an infectious disease, caused by bacterial organism Pasteurella Multocoda in ducks over four weeks of age. There is loss of appetite, high body temperature, thirst, diarrhea and sudden death. Most common lesions are pericarditis, arthritis, petechial and echymotic haemorrhages under the skin (Pink skin), in visceral organs, over the serous surface and intestine (Haemorrhagic enteritis). Liver and spleen are enlarged. The diseases can be controlled by sulpha drugs.

Vaccinate the birds with duck cholera vaccine, first at the age of 4 weeks and again at 18 weeks.

Prevention: By Vaccination.
Treatment:
1) Enrocin OR
2) 30 ml Sulpha Mezathine(33.1%) in 5 Ltrs of drinking water or 30-60 ml of Sulpha Quinoxaline in 5 Ltrs of drinking water for 7 days OR
3) Erythromycin OR
4) Rabatran Granules OR
5) Neodox-forte OR
6) Mortin Vet OR
7) Workrin OR
8) Kayasol.

These drugs can be administered under the Veterinarian's guidelines.

BOTULISM

Food poison is a serious problem in both young and adult ducks. It is caused by ingestion of bacterium that grows on decaying plants.

Prevention: Avoid ducks scavenging on decaying plant material.
Treatment: Epsom salt in drinking water which acts as purgative.

PARASITES

Ducks are resistant to internal parasites. The infestation is prevalent only among those ducks which have access to stagnant water, over-crowded ponds and small streams. The parasites include flukes, tape worms and round worms. These causes decrease of nutrient assimilation by the bird and anaemia due to toxic material excreted by them, destroying the red cells.

The external parasites are an infliction rather than an ailment. These include lice mites, fleas and ticks. These cause irritation and annoyance leading to loss in egg production. They also transmit many disease producing organisms. However, these are not commonly found on water-fowls as in chicken.

AFLATOXICOSIS

It is a condition caused by aflatoxin produced by the mould Aspergillus flavus in the feedstuffs such as groundnut, maize, rice polish and other tropical feeds on storage. Improper drying of grains, rain and humid weather favour the mould growth. Ducks are very susceptible to aflatoxin content in the feed. Out of the four types of aflatoxins commonly found viz, B1, B2, G1 and G2. B1 is the most potent toxin. The minimum toxic dose for ducks is 0.03 ppm or 0.03 mg per kg in feed.

Aflatoxin produces liver lesions and results in death when present in high concentration. Lower doses produce chronic effects such as lethargy, unthriftiness, hepatitis and delayed death.

There is no specific treatment for aflatoxicosis. When the source of aflatoxin is removed from the feed, birds make rapid recovery.

PERFORMANCE CHART OF KHAKHI CAMPBELL (EGG TYPE)

1	**Age at first egg**	**120 days**
2	**Age at 50% production**	**146 days**
3	**Annual Egg Production**	**250 eggs**
4	**Egg weight at 40 weeks**	**66 gms**
5	**Body weight at 40 weeks**	**1.80 kg**
6	**Daily feed consumption per bird**	**120 – 130 gms**
7	**Ducklings mortality (0-8 weeks)**	**2 – 3%**
8	**Grower mortality (8 – 20 weeks)**	**0.2 – 0.5%**
9	**Adult mortality (20 – 72 weeks)**	**5 – 7%**

PERFORMANCE CHART OF VIGOVA SUPER-M (MEAT TYPE)

1	**Day old body weight**	**47 – 48 gms**
2	**Body weight at 4 weeks**	**1.3 – 1.5 kgs.**
3	**Feed consumption upto 4 weeks**	**3.0 – 3.2 kgs**
4	**Body weight at 6 weeks**	**2.3 – 2.5 kgs**
5	**Feed consumption upto 6 weeks**	**5.8 – 6.2 kgs**
6	**Mortality (0-6 weeks)**	**2 – 3%**

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