



TURKEY - MANAGEMENT GUIDE



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TURKEY FARMING

Turkey occupies an important position next to chicken, duck, Guinea fowl and quail in contributing the most evolving sector, which is playing a significant role in augmenting the economic and nutritional status of varied population. They form almost two percent of the total poultry population. They are reared for meat only and its meat is the leanest among other domestic avian species. Turkeys are mostly concentrated in and around cosmopolitan cities of India in small numbers. Indigenous and non-descriptive turkeys are found in good numbers in Kerala, Tamil Nadu, eastern districts of Uttar Pradesh and some other parts of India.

Turkey and world:

Turkey farming is very popular in western countries and the major turkey producing countries are United States of America, Canada, Germany, France, Italy, Netherlands and the United Kingdom. The Annual per capita consumption of turkey meat in the above said countries ranges from 4-8 kg per year. Turkey population touched 259 millions in 1992(Singh, 1996). The estimated world turkey meat production in 2004 is 4.94 million tones.

History and thanksgiving holiday:

Turkey (*Meleagris Gallopavo*) is a large gallinaceous bird of the family *Meleagridae* that is native of North America, domesticated in Europe and are now important source of food in many parts of the world. Columbus took specimens to Spain in 1492. Reports on turkey were there in Germany in 1530 and in England by 1541.

The first president of the United States of America, George Washington, issued a general proclamation in 1789 to celebrate “thanksgiving” on November 26. In 1893 President Lincoln proclaimed the last Thursday of November a national thanksgiving holiday. Later it was changed to the fourth Thursday of November. However, turkey is synonymous with Christmas.

Turkey and India:

Turkey farming is in infancy in India. However, serious efforts are being made at Central Poultry Development Organisation (Southern Region), Hessarghatta, Bangalore to promote turkey farming. Kerala and Tamil Nadu are the leading states in turkey production. Turkey farming is getting popular fast in southern regions. There are three varieties of turkey commonly available in India. They are Broad breasted bronze, Broad breasted white and Beltsville small white. White turkeys seem to be more suitable for Indian conditions.

Breeds of turkeys in India:

Turkeys are not classified into breeds, however seven standard varieties are available, Bronze, White Holland, Bourbon red, Narragansett, Black, Slate, Beltsville small white.

Board breasted bronze:

The basic plumage color is black and not bronze. The females have black breast feathers with white tips, which help in sex determination as early as 12 weeks of age.

Board breasted white:

This is a cross between Board breasted bronze and White Holland with white feathers. This variety was developed at the Cornell University. White plumage turkeys seems to be suitable Indian-Agro climatic conditions as they have better heat tolerance and also good and clean in appearance after dressing.

Beltsville small white:

This variety was developed at Agricultural University Research Station, Beltsville, USA. It closely resembles the Board breasted white in color and shape but smaller in size. Egg production, fertility and hatchability tend to be higher and broodiness tends to be lower than heavy varieties.

Breeds of turkeys in the World:

It has been dominated by three breeding companies offering 4 parental heavy type breeds (Big six, Hybrid large white, Nicholar 900 & 700) and 5 medium heavy types (BUT-8, BUT-9, Big-9, hybrid super medium & Nicolas 300). In addition to Poland the regional breeders have introduced two medium varieties, Benkova and Jancowski in 1995. In Europe, medium type turkeys available are, Gaubin(France), and Kvama(Poland).

Turkey terminologies:

Tom	Adult male turkey
Hem	Adult female turkey
Poult	Young one of turkey
Snood or Dew bill	The fleshy protuberance near the base of the beak
Caruncles	The fleshy protuberance on the head and neck usually pink or red in color which appear from about 5 th week of age
Dewlap	A large flap skin seen immediately below the chin
Bread	A tuft of hair attached to the skin of the upper chest region
Strut	Mating behavior of male turkey
Shooting the red (Similar to an ulcer)	The development of caruncles and this is supposed to indicate the most difficult time in the life of young turkey

Debeaking:

Poults should be debeaked to control feather picking and cannibalism. Debeaking can be done at day old or 3-5 weeks of age. Remove the beak at about one half the distance from nostril to the tip of the beak.

Desnooding:

Removal of the snood or dewbill is to prevent the head injuries from picking and fighting. At the day old the snood can be removed by shumbnail or finger pressure. At 3 weeks of age it can be cut off close to the head with sharp scissors.

Detoeing or toe clipping:

Clipping is done at day old by removing the tip of the toe just to the inside of the outer most toe pad including the entire toenail.

Turkey egg:

The turkey will start lay from the 30th week of age and its production period is 24 weeks from the point of lay. Under proper feeding and artificial lightening management turkey hens lay as much as 60-100 eggs annually. Nearly 70 percent of the eggs will be laid in the afternoon. The turkey eggs are tinted and weigh about 85 gms. Egg is noticeably pointed at one end with strong shell. The protein, lipid carbohydrate and mineral content of turkey egg are 13.1%, 11.8%,1.7% and 0.8% respectively. The cholesterol is 15.67-23.97 mg/gm of yolk.

Turkey meat:

Turkey meat has nutritional and sensorial properties which make it almost ideal raw material for rational and curative nutrition. People prefer turkey meat because of its leanest nature. The protein, fat, energy value of turkey meat are 24%,6.6%, 162 Calories per 100 gm of meat. Mineral like potassium, calcium, magnesium, iron, selenium, zinc and sodium are present. It is also rich in essential amino acids and vitamins like niacin, vitamin B6 and B12. It is rich in unsaturated fatty acids and essential fatty acids and low in cholesterol.

Management Practices in turkey:

Incubation:

The incubation period is 28 days in turkey. There are two methods of incubation.

(a) Natural incubation with broody hens:

Naturally turkeys are good brooders and the broody hen can hatch 10-15 numbers of eggs. Only clean eggs with good eggshell and shape should be placed for brooding to get 60-80% hatchability and healthy poults.

(b) Artificial Incubation:

In artificial incubation, eggs are hatched with the help of incubators. The temperature and relative humidity in setter and hatcher are as follows:

	Temperature (Degree F)	Relative humidity (%)
Setter	99.5	61-63
Hatcher	99.5	85-90

Egg should be turned at hourly intervals daily. Eggs should be collected frequently to prevent soiling and breakage and also to get better hatchability.

Brooding:

In turkey 0-4 weeks period is called as brooding period. However, in winter brooding period is extended upto 5-6 weeks. As a thumb rule the turkey poults need double hover space as compared to chicken. Brooding day old poults can be done using infra red bulbs or gas brooder and traditional brooding systems.

Points to be noted during brooding:

- The floor space requirement for 0-4 weeks is 1.5 sq.ft. per bird.
- The brooder house should be made ready atleast two days before the arrival of poults.
- The litter material should be spread in a circular manner with a diameter of 2 mtrs.
- Poult guard of atleast 1 feet height must be provided to prevent the poults from wandering away from source of heat.
- Starting temperature is 95⁰F followed by weekly reduction of 5⁰F per week upto 4 weeks of age
- Shallow waterers should be used.

Turkeys are not the best starters in their life and will really need some tender loving care to get them safely through the first four weeks of life. The average mortality rate is 6-10% during this period. Young poults by nature are reluctant to eat and drink in the first few days of life, primarily because of bad eyesight and nervousness. Hence, they have to be force fed.

Force Feeding:

Starve out problem is one of the major factors for early mortality in poults. So special care has to be taken for supplying feed and water. In force feeding, milk should be fed at the rate of 100ml per liter of water and one boiled egg have to be given at the rate of one per 10 poults up to fifteen days and that will compensate the protein and energy requirements of the poults.

Poults can be attracted to the feed by gentle tapping of the container with the fingers. Colored marbles or pebbles placed in feeders and waterers will also attract poults towards them. Since turkeys are fond of greens, some chopped green leaves should also be added to the feed to improve the feed intake. Also colored egg fillers can be used for the first 2 days as feeders.

Litter materials:

The common litter materials used for brooding are wood shavings saw dust, paddy husk, chopped saw etc. The thickness of the litter material should be 2 inch at the beginning and may be increased to 3-4 inch in course of time by gradual addition. The litter should be raked at frequent intervals to prevent caking.

Rearing systems:

Turkeys can be reared under free range or intensive system.

Free range system of rearing:

Advantages:

- It reduces the feed cost by fifty percent.
- Low investment.
- Cost benefit ratio is high.

In the free range system, in one acre of fenced land we can rear 200-250 adult turkeys. Shelter should be provided during night at the rate of 3-4 sq.ft. per bird. They should be protected from predators during scavenging. Planting of trees is desirable for providing shade and cooler environment. The range should be rotated which will help to reduce incidence of parasite infestation.

Free range feeding:

Since turkeys are very good scavengers, it can consume earthworms, small insects, snails, kitchen waste and termites, which are rich in protein and that will reduce the feed cost by fifty percent. Apart from this leguminous fodder like Lucerne, Desmanthus, Stylo etc., can be fed. To avoid leg weakness and lameness in free ranging birds, calcium should be supplemented at the rate of 250gm per week per bird in the form of oyster shell. Ten percent of feed can be substituted with vegetable waste to reduce the cost of feed.

Health cover:

Turkeys in the free range system are highly susceptible for internal (round worms) and external parasites (fowl mite). Hence once a month deworming and dipping is essential to improve the growth of the birds.

Intensive system of rearing:

Advantages:

- Improved production efficiency.
- Better management and disease control.

Housing:

- Housing protects turkeys from sun, rain, wind, predators and provides comfort.
- In hotter parts of the country the long axis of the house should run from East to West.
- The distance between two houses should be at least 20 meters and the young stock house should be at least 50 to 100 meters away from the adult house.
- The width of the open house should not exceed 9 meters.
- The height of the house may vary from 2.6 to 3.3 meters from the floor to roof.
- An overhang of one meter should be provided to avoid the rainwater splash.
- The floor of the houses should be cheap, durable and safe preferably concrete with moisture proof.

When turkeys are reared under deep litter system, the general managerial conditions are similar to that of chicken but care should be taken to provide adequate floor, waterer and feeder space to accommodate the large bird.

Catching and handling of turkeys:

Turkeys of all age group can be easily driven from one place to another with the help of a stick. For catching turkeys a darkened room is best, wherein they can be picked up with both legs without any injury. However, mature turkeys should not be kept hanging for more than 3-4 minutes.

Floor, feeder and waterer space requirement of turkeys:

Age	Floor Space (Sq .Ft)	Feeder Space (cms) (Linear feeder)	Waterer Space (cms) (Linear waterer)
0-4 weeks	1.25	2.5	1.5
5-16 weeks	2.5	5.0	2.5
16-29 weeks	4.0	6.5	2.5
Turkey breeder	5.0	7.5	2.5

The temperament of turkeys is usually nervous; hence they get panicky at all stages. Hence entry of visitors in to the turkey's house should be restricted.

Feed: The methods of feeding are mash feeding and pellet feeding.

- ❖ The energy, protein, vitamin and mineral requirements for turkeys are high when compared to chicken.
- ❖ Since the energy and protein requirements for the both sexes vary they must be reared separately for better results.
- ❖ Feed should be given in feeders and not on the ground.
- ❖ Whenever change is made from one diet to another it should be carried out gradually.
- ❖ Turkeys require a constant and clean water supply at all times.
- ❖ Provide more number of waterers during summer.
- ❖ Feed turkeys during the cooler parts of the day during summer.
- ❖ Provide shell grit at the rate of 30-40 gm per day per bird to avoid the leg weakness.

Nutritional Requirements of turkey:

Items	Male	0-4	4-8	8-12	12-16	16-20	20-24	Adult/ Breeder
	Female	0-4	4-8	8-11	11-14	14-17	17-20	17-20
ME/kg diet		2800	2900	3000	3100	3200	3300	2900
Protein (%)		28	26	22	19	16	14	14
Lysine (%)		1.6	1.5	1.3	1.0	0.8	0.65	0.6
Methinine(%)		0.5	0.45	0.38	0.33	0.28	0.23	0.2
Calcium (%)		1.2	1.0	0.85	0.75	0.65	0.5	2.25
Phosphorous(%)		0.7	0.6	0.5	0.5	0.4	0.4	0.6
Vitamin A(IU)		4000	4000	4000	4000	4000	4000	4000
Vitamin D3(IU)		900	900	900	900	900	900	900
Choline (mg)		1900	1800	1300	1100	950	800	1800
Niacin (mg)		70	70	50	50	40	40	30

Green feeding:

In intensive system, greens can be fed upto 50% of the total diet on dry mash basis. Fresh Lucerne is first class green feed for turkeys of all ages. Apart from the Desmanthus and Stylo can be chopped and fed turkeys to reduce the feed cost.

Body weight and feed consumption:

Age in weeks	Average Body Weight (Kg)		Total feed consumption (Kg)		Cumulative feed efficiency	
	Male	Female	Male	Female	Male	Female
Upto 4 th week	0.72	0.63	0.95	0.81	1.3	1.3
Upto 8 th week	2.36	1.90	3.99	3.49	1.8	1.7
Upto 12 th week	4.72	3.85	11.34	9.25	2.4	2.4
Upto 16 th week	7.26	5.53	19.86	15.69	2.8	2.7
Upto 20 th week	9.62	6.75	28.26	23.13	3.4	2.9

Note: FCR of 2.13 with feed consumption of 140gm/day on feed with 4,400 k.cal/kg. ME (Thayee et.al, 1985)

BREEDING PRACTICES:

Sexing: Physical appearance of form:

1. Toms are heavier. Matured toms have black bread attached to the skin of the upper breast region.
2. Dew bill or snood, a fleshy protuberance near the base of the beak, which is relatively large, plumb and elastic.
3. Pink or red fleshy protuberances on the head called as caruncles will appear in toms usually by about fifth week and is referred to as shooting the red.
4. Male poults strut even at day old and continue throughout the life.

Hen turkey:

1. The dew bill or snood is relatively small, thin and non-elastic.
2. The bread and caruncles are absent.

Vent sexing is not practiced usually in case of turkeys.

Natural mating:

The mating behavior of tom is known as Strut, wherein it spreads the wings and makes a peculiar sound frequently. In natural mating the male; female ratio is 1:5 for medium type turkeys and 1:3 for large types. On an average 40-50 poults is expected from each breeder hen. Toms are rarely used for mating after first year due to reduced fertility. There is a tendency in toms to develop affinity towards a particular female, so we have to change the toms for every 15 days.

Artificial insemination:

The advantage of artificial insemination is to maintain high fertility from turkey flock through out the season.

Collection of semen from Tom:

- The age of tom should be 32-36 weeks for semen collection.
- The tom should be kept in isolation at least 15 days before semen collection.
- The tom should be handled regularly and the time required to collect the semen is 2 minutes.
- As the toms are sensitive to handling, the same operator should be used to get maximum volume of semen.
- Average semen volume is 0.15 to 0.30ml.
- Use the semen within one hour of collection.
- Take the collection three times weekly or on alternative days.

Insemination in hens:

- Artificial insemination is done when the flock attains 8-10% egg production.
- Inseminate the hens every three weeks with 0.025-0.030ml of undiluted semen.
- After 12 weeks of the season it may be better to inseminate every fortnight.
- Inseminate the hen after 5-6' O clock in the evening.
- The average fertility should be 80-85% over a 16 week breeding season.

Marketing of turkeys:

The meat of turkey has nutritional and sensorial properties which make it almost ideal raw material for rational and curative nutrition. The turkey can produce 30gm of digestible protein from 100gm feed. The dressing percentage of turkey is 80-87%, which is highest of all farm species.

- The body weight of tom and hen turkey at the 16th week is 7.26 kg and 5.53kg. This is optimum weight for marketing the turkeys.
- The cumulative feed efficiency at the marketing should be 1:2.8 for toms and 1:2.7 for hens.

A market study shows that a male turkey sold at 24 weeks of age weighing 10 to 20 kg with expenditure of Rs.300 to 450 will give a profit of Rs. 500 to 600. Likewise a female will give a profit of Rs.300 to 400 in a span of 24 weeks time. Besides, the turkey can be reared in scavenging and semi-scavenging conditions also.

Economic Parameters in Turkey Farming

Male – Female ratio	1:5
Average egg weight	65gms
Average day old poult weight	50gms
Age at sexual maturity	30weeks
Average egg number	80 -100
Incubation Period	28 days
Average body weight at 20 weeks	4.5 – 5 (f) 7-8(m)
Egg production period	24 weeks
Marketable age	Male Female
	14 -15 weeks 17 – 18 weeks
Marketable weight	Male Female
	7.5 kg 5.5 kg
Food efficiency	2.7 -2.8
Average feed consumption upto marketable age	Male Female
	24 -26 kg 17 – 19 kg
Mortality during brooding period	3-4%

Common Diseases of Turkey	Cause	Symptoms	Prevention
Arizonosis	<i>Salmonella Arizona</i>	Poults unthrifty and may develop eye opacity and blindness. Susceptible age 3-4 weeks	Elimination of infected breeder flock and hatchery fumigation and sanitation.
Blue comb disease	<i>Corona virus</i>	Depression, loss of weight, frothy or watery droppings, darkening of head and skin.	Depopulation and decontamination of farm. Give rest period.
Chronic respiratory disease	<i>Mycoplasma gallisepticum</i>	Coughing, gurgling, sneezing, nasal exudates.	Secure <i>Mycoplasma</i> free stock
Erysipelas	<i>Erysipelothrix rhusiopathidae</i>	Sudden losses, swollen snood, discoloration of parts of face, droppy	Vaccination
Fowl cholera	<i>Pasturella multocida</i>	Purplish head, greenish yellow droppings, sudden death	Sanitation and disposal of dead birds.
Fowl pox	<i>Pox virus</i>	Small yellow blisters on comb and wattles and scab formation	Vaccination
Haemorrhagic enteritis	<i>virus</i>	One or more dead birds	Vaccination
Infectious synovitis	<i>Mycoplasma gallisepticum</i>	Enlarged hocks, foot pads, lameness, breast blisters	Purchase clean stock
Infectious sinusitis	<i>Bacteria</i>	Nasal discharge, swollen sinuses and coughing	Secure poults from disease free breeders
Mycotoxycosis	<i>Fungal origin</i>	Haemorrhages, Pale, fatty liver and kidneys	Avoid feed spoilage
New Castle disease	<i>Paramyxo Virus</i>	Gasping, wheezing, twisting of neck, paralysis, soft shelled eggs	Vaccination
Paratyphoid	<i>Salmonella pullorum</i>	Diarrhea in poults	Prevention and flock sanitation

Turkey coryza	<i>Bordetella avium</i>	Snicking, rales and discharge of excessive nasal mucus	Vaccination
Coccidiosis	<i>Coccidia spp</i>	Bloody diarrhea and loss of weight	Proper sanitation and management of litter
Turkey venereal disease	<i>Mycoplasma meleagris</i>	Lowered fertility and hatchability	Strict sanitation

Vaccination Schedule:

Day Old	ND – B1 Strain
4 th & 5 th Week	Fowl Pox
6 th Week	ND – (R2B)
8 – 10 Week	Cholera Vaccine

Other Conditions:

Blue back:

Blue back is a permanent dark discoloration of the skin on the back and sometimes the side and the breast of the turkeys with dark plumage but not turkeys with white plumage. It is caused by recessive factor.

Pendulous crop:

Pendulous crop is otherwise known as baggy or sour crop. Weakening of the crop and supporting tissues causes dropped crop so that feed and water accumulate in the organ and pass out slowly or not at all resulting in foul smelling semi liquid accumulation affecting the crop lining and treatment always useless.

Prevention:

- Selecting strains not carrying the genetic factor.
- Avoid exposure of turkeys to excessive heat without shade.
- Giving continuous and easy access to clean and cool drinking water.
- Providing ample shade.

Stampeding:

Turkeys are subject to fright especially during night. Severe losses from injury, straying, smothering, bruising, broken limbs and death by predatory animals may result into stampedes. Avoiding disturbances at night and providing low intensity light at night may lessen it.

Breast blisters :

They are much more common in toms than in hens. They are believed to be caused by continuous irritation of the skin that covers the breastbone.

Cannibalism:

Feather picking is a mild form of cannibalism to which turkeys are addicted, especially during the growth period. It can be prevented almost completely by debeaking.

Prevention:

- Avoiding overcrowding in confinement.
- Feeding an adequate diet.

Control of *Mycoplasma* in Turkeys:

Pulse treatment with Tiamutin:

Tiamutin is given at the recommended dose for three days in a month in turkeys in order to prevent the occurrence of *Mycoplasma* infections.

Measures to be taken during outbreak:

- Quick disposal of dead birds.
- All sanitation measures of drinking water to be adopted.
- Spraying of disinfectant in the shed.
- Separation of working personnel of infected pen from healthy pens.
- Personnel hygiene before and after entering in the infected pens.
- Use Vitamin E and C to overcome stress.
- Frequent change of infected litter.
- Quick separation and disposal of sick and ailing birds.

Measures to be taken after breakout:

- Infected flock after recovery should be disposed off quickly.
- Emptied sheds and infected equipment should be thoroughly cleaned and disinfected before reusing the same.
- Disinfected sheds can be kept empty for 2-3 weeks before housing the birds.
- Burning should destroy the infected litter.

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