

Ostrich

Introduction

The Ostrich is the largest living bird in the world. It is of the Ratite family, which means flightless bird. The Ostrich is native to Africa, yet thrives in countries all over the world.

Adult males are eight to ten feet in height and weigh 350-400 pounds. A male Ostrich is called a rooster and a female Ostrich is called a hen. The male is black with white wing tips and tail plumes. The female has light brown and grey plumage and is slightly smaller than the male.

This great bird has two toes, all other birds have three or four toes. The Ostrich can run at speeds of up to 40 MPH for sustained times. An Ostrich will live to be 50 - 75 years old. Although an ostrich egg is the largest of all eggs, it is the smallest egg in relation to the size of the bird.

The Ostrich egg will weigh 1600 gm and is equivalent to 2 dozen chicken eggs. An Ostrich Hen can lay 40 -100 eggs per year, averaging about 60 eggs per year.

Ostrich eggs hatch in 42 days. An Ostrich chick grows one foot taller each month until it is 7-8 months old. Females sit on eggs by day; males sit on eggs by night.

Male ostriches are black, with white wings and tail. The white feathers of the male, which are large and soft, are the ostrich plumes of commercial value. The female is dull greyish brown. The males are polygamous, and move with three or four females or in groups of four or five males accompanied by mates and young ones. The females lay their yellowish white eggs together in a single large depression in the sand. The eggs weigh about 1.48 kg each and have a volume of about 1.4 liters. The male sits on them at night and the female incubates them by day. The life expectancy is about 60-70 years.

The first organised ostrich farm was established for feathers in about 1863 in Karoo and Eastern Cape region of South Africa.

Advantages of Ostrich farming

The bird can be reared in paddock alongwith sheep, goat and cattle.

The birds need no dipping, drenching, milking and shearing.

The adaptability of the bird is equally high on annual and perennial pastures or scrub.

The bird can be reared both in hot and freezing temperatures.

The bird has shown high sustainability in irrigated as well as rainfed farming environments.

There is virtually no waste products in the bird.

The size of the farm is not a limiting factor.

The added value segments all along the products is very high.

The limiting factors that can be prudently managed are

High capital investments for setting up of the farms.

The markets for meat and its byproducts are not easily accessible.

The high penalties for slaughtering older birds (20 months and above) in the European countries.

The birds are potential and vulnerable for avian disorders particularly for Newcastle disease.

Ostrich Nutrition

Newly hatched chicks up to 4 - 6 weeks are generally fed a high protein ration ranging from 20 - 22 % . These starters are designed to meet the high energy requirements of young babies. Young chicks should consume 50 - 120 grams per day to maintain growth requirements. The length of time on this ration will depend on the individual chick.

Care must be undertaken to ensure chicks have sufficient exercise, as they may gain weight very quickly.

Chicks from approximately 6-8 weeks to 3-4 months are switched from the higher protein level feeds to a lower level varying from 17-21%. The feeds are designed to promote steady growth while minimizing rapid weight gains, which can potentially create leg problems in young chicks. Exercise and run areas are essential to the development of strong legs and bone structure. The pellet or chip size is prepared for birds of this category in different diameters.

Chick from 3 -4 months to pre-breeders are classed as *Growing Birds*, for feed purposes. At this age birds may be fed a pellet ration containing levels from 16-18 % protein, depending on the feed program of various feed companies. Feeds are designed to promote even growth and good feathering, without pushing birds too hard.

Breeder Birds are generally switched from a maintenance ration to a breeder ration, 21-24% protein levels, roughly 4 weeks before the expected breeding season commences. Adult breeding ostriches can eat 2½ to 5 pounds per day. Once the breeding season is complete, the birds should be placed back on a maintenance ration.

Ostrich Starter

Ingredient Name	Amount (Pounds)
Soybean Meal	26.50
Corn Grain, Yellow	25.20
Alfalfa (Dehydrated)	18.60
Peanut Hulls	9.53
Sorghum	8.50
Corn Screening	5.50
Calcium Carbonate	1.84
Dicalcium Phosphate	1.84
Nutra Blend Vitamins	1.25
Fat (Animal)	0.80
Salt	0.60
DL Methionine	0.07
Total Weight	100.00

Ostrich Grower

Ingredient Name	Amount (Pounds)
Soybean Meal	26.00
Corn Grain, Yellow	22.90
Alfalfa (Dehydrated)	15.00
Sorghum	15.00
Wheat Midds	6.50
Fish Meal (Menhaden)	5.00
Peanut Hulls	4.80
Calcium Carbonate	1.47
Nutra Blend Vitamins	1.25
Diacalcium Phosphate	1.23
Fat (Animal)	0.50
Salt	0.30
DL Methionine	0.04

Total Weight	100.00
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Ostrich Breeder

Ingredient Name	Amount (Pounds)
Soybean Meal	27.40
Corn Grain Yellow	21.00
Corn Screenings	10.20
Sorghum	10.00
Alfalfa (Dehydrated)	9.80
Meat and Bone Meal	8.18
Calcium Carbonate	4.90
Peanut Hulls	4.80
Nutra Blend Vitamins	1.25
Dicalcium Phosphate	1.20
Fat (Animal)	0.60
Salt	0.60
DL Methionine	0.06
Total Weight	100.00

Sexual characteristics

The wild ostrich is sexually mature at four to five years of age, while the domesticated ostrich is mature at two to three years; the female matures slightly earlier than the male.

From about seven to eight months of age, the sex can be determined when the bird urinates or defecates, as the penis emerges at these times. It is interesting to note that, unlike most birds, the male ostrich has a penis and that micturition and defecation are separate acts, although one normally follows the other almost immediately.

Full distinction between sexes is reached at about two years of age. The wing quills are pure white in the male, while they are ringed with grey or black in the female. The tail feathers of the male are white or yellowish brown and those of the female are mottled light and dark grey. The thighs of the adult ostrich are almost devoid of feathers.

Paddock

Ostriches prefer larger paddocks; however, oversized paddocks can cause birds to become wild, skittish and hard to control. A good paddock size for a breeding pair is one to three acres. Planting the paddock to alfalfa will allow the birds to have quality forage for grazing. A few trees or shrubs for shade and privacy are advised. The paddock should be enclosed with 5-foot-high wire fence. There should be a double fence between two paddocks, with at least 6 feet between fences to prevent males from injuring themselves fighting. Four to five strands of eight-gauge smooth wire is sufficient with posts spaced 10 feet apart. The pen should have an area about 25 square feet by 6 inches deep of clean sand for the birds to roll in.

Feeders should be open-type measuring about 48 inches long by 14 inches wide and 4 to 6 inches deep. Feeders should be partitioned into equal sections, one containing a ratite breeder ration, one containing shelled corn and one containing oyster shell. A one-day supply of breeder ration and shelled corn should be placed in the feed box. The water pan should be 24 to 30 inches wide and 5 to 8 inches deep. Ostriches drink by scooping water with their beak. Therefore, they need a depth of water sufficient to immerse their beak and a long enough distance to move across to adequately drink. Feeders and waterers should be mounted at the bird's chest height.

The breeding season

Ostriches are seasonal breeders, breeding only during particular seasons of the year. On average, the breeding/mating season lasts from six to eight months every year, although the timing and duration of breeding can vary with latitude and altitude (Shanawany, 1994a). In the northern hemisphere, breeding commences during March and ends around August/September (Leuthold, 1977), while in the southern hemisphere it begins around July/August and finishes by the end of March (Jarvis, Jarvis and Keffen, 1985).

Eggs

The female starts to lay fertile eggs shortly after mating. Eggs are laid every other day in clutches (sequences) of 20 to 24 eggs. The hen stops laying for a period of seven to ten days, after which she starts a new clutch. High-producing females lay between 80 to 100 eggs during the breeding season.

The eggs are laid in a communal nest on the ground, with other females laying their eggs in the same nest (Bertram, 1992). If the eggs are not removed, the female will start incubating them during the day, leaving the male to incubate from dusk to dawn. The male's jet-black feathers assist in hiding the eggs during the night. For commercial ostrich farming, it is important that all eggs are removed from the nest at least twice daily (Shanawany, 1994b), since, if allowed to incubate, the female will stop laying until the chicks have reached four to five weeks of age, resulting in financial loss.

The following guidelines apply to the handling of Ostrich eggs in general

Period of Laying

March – August / September

Laying

Laying will start when the female is 2½ - 3 years old, and the yearly production will be 40 – 60 eggs per female.

Storage of Eggs

Eggs must be stored at a temperature of 16-18°C, and avoid storing them for longer than 7 days. During the storage period the eggs must be turned once every day.

Egg Size (average)

Length 150 mm

Diameter 135 mm

Weight 1300-1700 g

Incubation Period

40 - 43 days

Setting of Eggs

It is recommended to set eggs only once every week.

The eggs are placed in the special ostrich egg trays with the air-cell end upwards. If the air-cell end is placed downwards, the embryo will not develop. The air-cell is located by means of a candling lamp.

Incubation Temperature and Humidity Levels

Setter	36.1 – 36.7°C (97.0 - 98.0°F)
Hatcher	36.0 - 36.7°C (96.8 – 98.0°F)
Humidity Setter	20 – 40% RH
Hatcher	60 – 70% RH

Incubation

Incubation parameters:

In nature both males and females brood the eggs, hens during the day, cocks mostly during the night.

The eggs are in contact with the parent bird's bare skin

The temperature at the top of the egg is always higher than at the bottom.

When changing shifts, the eggs are turned and aired.

Incubation of an ostrich egg takes 42 days on the average

In artificial incubation the temperature has to be around 97.5 degrees F.

Towards the end of incubation the temperature may be a bit lower since the embryo also produces heat at a later stage of development.

Relative humidity is set between 20 and 35%.

During the 42 days of incubation the egg loses 11-18% of its total weight by exuding of water and carbon dioxide

The rate at which water is lost depends on the relative humidity of the incubator as well as on the pore density and shell thickness of the egg.

Since each egg is different, the rate at which weight is lost also differs.

Ideally the eggs should have lost 13% of their weight at 42 days.

In practice the weight loss is measured for all eggs at 21 days.

At that time the water-loss should be half-way (6-7%).

Good ventilation inside the incubator is also essential because the embryo has to breathe; it takes oxygen and it produces water and carbon dioxide, which have to be removed.

If the airflow is insufficient, the embryo may suffocate.

Hatching

The temperature in the hatcher has to be 2 - 3 degrees C lower and the R.H. slightly higher

Eggs are transferred to the hatcher room at 39 days or as soon as internal pipping can be heard.

This happens when the fully formed embryo breaks through the membrane into the air sac for its first breath of air.

It is then able to 'cheep'. The neck muscles then stiffen and the chick's head breaks through the shell.

Now the chick has unlimited oxygen supply and can work its way out. After internal pipping, the chick can survive for 2-3 more days.

Some chicks are malpositioned inside the egg or don't have the strength to break the shell, these need some help.

Before hatching, the yolk sac is absorbed inside the chick's belly. After hatching, the navel, where the umbilical cord makes the connection with the yolk sac, has to be sprayed with a disinfectant (e.g. iodine).

The chicks should stay in the hatcher till completely dry and their feathers fluffed out.

Brooding

The brooding period is a very critical time and can be a time of high mortality if proper management is not used. The brooding area should always be clean and sanitary and have protection from the weather. A source of heat should be provided for the brooding area. Chicks will need access to temperatures of approximately 90°F for the first 10 to 14 days. The temperature can be reduced a few degrees each week until the chicks can survive without supplemental heat. (A few days or a few weeks depending on environmental temperatures.) Chicks will usually demonstrate the need for more or less heat by their actions. If they huddle close to the heat source additional heat may be necessary, while if they are grouped as far from the heat as possible, less heat and more fresh air may be needed. Maintaining the brooding area at a uniform temperature rather than having just one heat source may be preferred since the likelihood of chicks getting too far from the heat and getting chilled is minimized. The floor of the brooding area should not be slick because chicks may slip and leg damage (spraddle legged) can result. Usually the floor should be covered with some sort of absorbent material such as wood shavings, straw, rice hulls, or clean sand.

Determining the Sex of Chicks

It is difficult to determine the sex of young chicks because both sexes look very much the same. Such factors as smoothness or roughness of tarsal scales or breaks in the scutellation on the toe do not help in separating the males and females. In fact there is no outward appearance characteristics that are indicators of the sex. The only reliable method is examining the sex organs. In newly hatched chicks the presence or absence of a penis is the only evidence of differences. At a young age the penis is difficult to identify and is sometimes easily confused with the female clitoris, which is about the same size and appearance. Until the time of sexual maturity the sexual organs remain small. In young birds of approximately nine months of age or older, the sex can be determined when the bird urinates or defecates since the penis emerges during the performance of these functions. As with other animals, the male is frequently larger than the female in birds the same age.

Disease

In all circumstances, but especially in **artificial** intensive circumstances, chickens are subject to parasites and diseases. We divide the condition as follows:

External parasites

Ticks

Different types of ticks transmit various types of diseases, among others Congo fever, which also affects humans. In addition, the long mouth parts of the tick cause extensive damage to the skin when they "tunnel" through the skin. The bont-legged tick is seen as the biggest threat in the ostrich industry. Ostriches can be treated for ticks with pyrethroid-containing medication, e.g. Bayticol.

Lice

Feather lice are seen as the parasites responsible for damage to the flue. Because feather lice eat flue, the money value of especially white plumes, but also that of the bodies (short feathers) decreases as the damage causes the feathers to have a moth-eaten appearance. This of course

lowers the utilitarian value of the feathers and, as a result, the income. Treatment with pyrethroid, e.g. Bayticol, is recommended.

Internal parasites

Tapeworm Tapeworms are long, flat worms of about 50 to 100 cm in length that live in the small intestine and which deprive the bird of food.

One of the side-effects on the live bird is emaciation because not enough nutrients are taken in by the bird, as it is instead absorbed by the worms. Severe infestation can even cause intestinal obstruction. Regular treatment every three months with e.g. Lintex combats the parasite effectively.

Wireworm Wireworms are very small, round red worms of about 3 mm long that live in the stomach wall. This parasite is virtually invisible to the naked eye and causes a lot of damage to the stomach wall that causes sudden death because the parasites suck blood and therefore deprive the animal of life-giving blood, in addition to which they also cause severe inflammation of the stomach. Regular treatment with e.g. Panacur is necessary to combat this problem and deaths as a result of it.

Infectious diseases

Haemorrhagic enteritis

This is the most feared disease that can occur in small chickens in the age group 1 to 3 months. This condition is caused by a small germ (bacterium) that leads to inflammation of the intestines, to such an extent that digestion cannot take place. These organisms also secrete a poison that causes rapid death.

Influenza

Green urine (influenza), or avian influenza, is a deadly disease that can affect all bird species. This disease leads to large-scale deaths in especially ostriches younger than six months. Because it is a viral disease, there is no treatment. Characteristic of the disease is green urine.

Avian influenza is a notifiable disease, in other words it should be reported to the nearest state veterinarian.

Pox

Avian pox occurs in various bird species and is characterised by warty, brown, swollen nodes round the eyes and especially round the corners of the mouth and beak. The disease can lead to large numbers of birds dying if not stopped in good time.

Biting insects, like mosquitoes, transmit pox and the disease is therefore especially prevalent in wet summer seasons. Inoculation with pox vaccine can however control this condition.

Newcastle disease

This is the most feared poultry disease and it is responsible for regular epidemics and the death of thousands of chickens. Ostriches, especially young chickens, are extremely prone to this disease. Pigeons and aquatic birds are also vulnerable. Symptoms include loss of balance, giddiness, staggering backwards, swinging sideways and taking a three-legged position with the head on the ground.

There is no treatment for this disease and it can only be prevented by inoculation against Newcastle every three months with a suitable Newcastle vaccine. All other poultry, ducks and pigeons should also be inoculated regularly.