

# Importance of Emu and its farming in India

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## Abstract

Emu is the second largest flightless bird and scientifically known as *Dromius noveahollandiae*. In India, Emu farming will be a booming agri-business due to their valuable products. Emu is becoming popular for having 98% fat free red meat. Emus attain sexual maturity by 18 to 24 months and breeding occurs during October to February month in India. Emu eggs are weighing about 600 to 800 grams and emerald green in color. Emu chicks weigh about 370 to 450 grams and required floor space of 40ft. x 30 ft. for about 40 chicks with outdoor space and for grower it is 40ft. x 100 ft. for 40 birds. Emu also can be called as “million dollar birds” and its farming is getting great economic importance. Emu oil act as wound healing agent, reduces recent keloid scarring, excellent emulsifier having anti-inflammatory properties and its ability to penetrate the skin. Emu skin is soft and supple, characterized by a raised area around the feather follicles which gives a pleasing dotted pattern, when use for clothing, boots, bags, wallets and crafts. Emu nails are also been used as key chains, pendants in necklaces. Emu eyes are being used to replace damaged corneas in human beings.

**Key words:** Emu, *Dromius noveahollandiae*, Emu-farming, Emu-oil, Emu-meat.

Emu is the second largest flightless bird under the group ratites. It is scientifically classified as *Dromius noveahollandiae* along with other members of the group ostrich, kiwi, rhea and other flightless birds. Emu farming will be a booming agri-business due to their benevolent donations to the human race viz. pain relieving oil, red healthy meat, soft, supple leather and gorgeous feathers. Presently, emu is native to Australia and its farming spread all over the world like U.S.A, China and Australia including Asian countries. Emu is becoming popular for having 98% fat free red meat and other utilities obtained by products namely; emu oil, skin, feathers and ornamental eggs and toes.

An NRI of West Godavari district in Andhra Pradesh started emu farming for the first time during 1998. Presently, emu farming is being carried out in large scale in States of Andhra Pradesh, Tamil Nadu, Maharashtra, Karnataka and parts of Kerala. Since 2000, Department of Poultry Science, Veterinary College, Venkateshwara University, Andhra Pradesh is doing pioneer work in the areas of research on emu. Central Poultry Development Organization and Training Institute, Govt. of India, established an organized emu unit during 2007, with a foundation stock of 30 pair breeding stock for expansion and to act as National Centre for Emu. Nevertheless, emu farming is eco friendly, highly effective, excellent business, currently numbers of private emu farms have been set in different parts of India.

### **Physical features of emu**

Emu chicks when hatch out have body stripes similar to squirrel later and grow after three months. Thereafter, they lose the stripes which turn into brownish black feathers. Adult emu will be a large bird up to 6 feet height with long neck and small naked head and weighs 45 to 60 Kg. Legs are long and covered by scaly skin and three toes in the leg, entire body covered by long feathers while on the neck it is absent.

### **Sex differentiation**

Phenotypically emus look similar in both sexes. However, sexing is done on day old based on feather sexing, vent sexing by identifying male organ and sound differentiation on maturity. Emu identification is usually done by painting different colours on the legs, leg strips and micro chipping. Moreover, male emu after getting maturity makes grunting sound, whereas female makes drumming sound.

### **Breeding of emus and its management**

Emus attain sexual maturity by 18 to 24 months and breeding occurs during October to February month in India. In nature, the female mates with the male during breeding season and gives a clutch of eggs. Later, male sits for brooding on these eggs for a period of 52 days without food and water. Emu generally gives eggs during evening between 5:00 to 7:00 p.m. Each adult emu after three years can give an average egg production of 30 eggs during breeding season. Emu birds require different nutritional requirements, in which a pre-breeder ration with high protein and micro nutrients is given to prepare for breeding. During breeding, the feed consumption will be reduced to fifty percent. After breeding, maintenance ration is given with low protein and low energy diet.

### **Hatching of emu eggs**

Emu eggs are weighing about 600 to 800 grams and emerald green in colour. The incubation period in emu is about 52 days. Eggs are collected on regular basis and are stored in a cooler temperature of 60°F maximum up to seven days. Later they are set in incubator machines which are specially designed to hold emu eggs with a dry bulb temperature of about 96 to 97°F and wet bulb temperature of about 78 to 80°F (about 43% relative humidity) up to 48<sup>th</sup> day with regular turning mechanism every one hour. From 49<sup>th</sup> day the eggs are shifted to hatcher, wherein till 52<sup>nd</sup> day they are kept. Emu chicks hatch out on 52<sup>nd</sup> day naturally; assisted hatch is also carried out manually by helping the chick to come out by opening the shell at the head and toe positions. The normal hatchability is about 80%.

### **Chick management**

Emu chick breeds naturally and/or by using incubator. Artificial incubation is often conducted at a temperature of approximately 97.5°F. Born chick colors are coffee brown with white line marks and change after 3 months. Reproducing chicks can be repeated with an adult pair of Emu's for minimum 25 times (25-40 eggs every year). Emu chicks weigh about 370 to 450 grams. For the first 48 to 72 hours, emu chicks are restricted to Hatcher itself for absorption of egg yolk and proper drying. The brooding shed would be prepared well in advance with

thorough cleaning and disinfection and flooring should be covered with gunny bags to prevent slipping of legs of young chicks. Emu chicks have long legs and are very active, slippery flooring will make emu chicks to have hip dislocation resulting in irreparable damage. Arrange a set of brooder for about 25 to 40 chicks, giving four sq.ft./chick for first three weeks. Provide brooding temperature of 90°F for the first ten days and 85°F till three to four weeks. Provide feed and water with a brooder guard of 2.5ft. height. Feed starter mash for first 8 weeks. Provide sufficient run space for the chicks to have healthy life. Hence, floor space of 40ft. x 30 ft. is required for about 40 chicks with outdoor space.

### **Grower management (9 to 42 weeks of age)**

As emu chicks grow they require bigger size of waterers and feeders and increased floor space for run. Feed the birds grower mash till 42 weeks of age. 10% Greens (carrot, papaya, cucumber) can be offered, deworm the birds once with broad spectrum anthelmintic/ivermectin and vaccinate with R<sub>2</sub>B at 8<sup>th</sup> week and repeat at 40<sup>th</sup> week against Ranikhet disease. Provide 40ft. x 100 ft. space for 40 birds.

### **Housing and feeding of adult emus**

Emus are reared in open paddocks which will have chain link fencing of 2x2 or 3x3 enclosure with 2 ft. concrete wall construction on this chain link mesh of 6 ft. ht. is erected. Night shelter is optional with usual asbestos sheet roofing of 6 to 8 ft. Feeding is given in feed troughs which are usually hung on the fence and water is given in specially designed water tank or troughs with good drainage.

### **Products of emus and the economic importance**

Emu, can also be called as “*million dollar bird*” and its farming is getting great economic importance and booming an agri-business. A pair of 3 months old birds will be priced about Rs. 18000/- . ***and a pair of 15 months old birds (having live boy weight each 40 to 50 Kg)***. Different products of emus are listed below:

**1. Emu meat:** Emu meat is 98% fat free red meat, rich in protein, iron, vitamin B<sub>12</sub> and vitamin C, hence it is an excellent diet for people suffering from heart ailments. The tenderness and texture of emu meat enables to be fit for preparations, it is low in fat, loses moisture quickly and best under moist heat cooking. The emu meat contains less than 0.05% cholesterol. Due to healthful benefits of emu meat, Americans recognized the emu meat as a healthy alternative to beef.

**2. Emu Oil:** Emu oil is semi solid white mass, which is generally located all along back of bird, but when it is processed and refined it is a clear liquid. Emu oil fatty acid composition makes it to have high permeability when applied on to human skin. Furthermore, it is being used for treatment of various conditions namely arthritis, skin treatment, burn injuries, hair loss, etc. This property of high permeability is made use for delivering specific drug molecules for treatment of skin conditions. Emu oil act as wound healing agent, reduces recent keloid scarring and excellent emulsifier. The oil is extremely fine, making it exceptionally penetrating, moisturizing, cholesterol reducing and is used in treatments for muscular and joint ailments, as well as cosmetics and skin care products. Emu oil has also two major benefits having its anti-inflammatory properties and its ability to penetrate the skin. Nonetheless, it is also found to provide some solar protection and its penetrating effect appears to be related to its non-phosphorous composition. These analgesic, anti-allergic and antiseptic properties of emu oil make it to provide the economic values in emu farming and having the price of Rs. 1000 / per Kg of raw fat or crude oil of emu.

**3. Emu Skin and feathers:** Emu skin is of high quality with usual yield of about 6 to 8 sq. ft. per bird and price good quality skin is reported to be Rs.700/- to Rs.1000/- per Sq ft. This is used in preparation of leather products including apparels. The leg skin is very unique and with scales similar to crocodile skin and is being used in protective things for knives, swords and shoe top etc. Emu skin is soft and supple, characterized by a raised area around the feather follicles which gives a pleasing dotted pattern, when body leather is used for clothing, boots, bags and wallets, as well as being a wonderful medium for crafts. It has a great demand in international leather industry for producing new fashionable goods. Emu feathers are soft and are being used in preparation of brushes specifically used in cleaning hard ware and circuits of electronic goods including computers. They are used as feather duster, feather pad, fans, bows, and masks, finishing metals prior to painting, weather-proof apparels, and pillows, blazers, sweaters, jewelry, and craft items. Usually approximately 400 to 600 gms of feathers would be available from a bird and each bird would fetch about Rs. 200/- at present.

**5. Emu egg and toe nail:** The unfertilized eggs which are emerald green are cleaned and used in crafting antique mementos for sale with different carving on the shell. Emu nails are also been used as key chains, pendants in necklaces. The eggs have a distinctive dark green granulated surface. They are very attractive when carved, or made into ornaments and jewellery items. The Aborigines (native Australians) have eaten the eggs for years, and they were a nutritious addition to the diets of the early white settlers.

### Miscellaneous product:

Besides eggs, meat, oil, skin and feathers, the eyes of emus are being used to replace damages corneas in human beings.

In general, 15 moths of old emu broiler weighing 40 kg after slaughtered, its oil, meat and skin etc. would have market values as following:

Products	Present market price of produce per unit
43% boneless meat	Rs. 300/- to Rs. 450/ Kg
14% bone meat	Rs. 200/ Kg
5% feather & skin	Rs. 200 + Rs. 1000
22% fat	Rs. 1000 / Kg (raw oil)
3% leg skin	Rs. 500/-
4% neck	Useful but not sold at present
3% blood	Useful but not sold at present
4% waste	Useful but not sold at present
About 96% useable bird Refined oil	Rs. 3000/- to Rs. 4000/- per liter

(Source: [http://emufarming.org/emu\\_farming](http://emufarming.org/emu_farming))

### Some Peculiarities about emu

- Emu eats fruits, flowers, insects, seeds and green vegetation and love caterpillars.
- Emus require 6-10 liters' good water daily.
- Emus require 3 times food per day.
- Emus are being raised in a variety of conditions ranging from the cold winters to the extreme heat.
- Female emu or hen begins laying eggs and male emu keep watch of incubation.
- The male waits until the female lays at least 9 eggs and then he starts incubating them by sitting on the nest.
- He incubates them for 52-56 days and doesn't eat or drink during this time.
- Emu can reproduce for as long as 25 years.

### Nesting, social and sleep behaviour

Nesting takes place in winter. The male builds a nest by placing bark, grass, twigs, leaves, and few feathers in a shallow depression in the ground. The nest consists of a platform of grass on the ground, about 10cm thick and 1-2m in diameter. Five to fifteen eggs, measuring 130x90mm, are laid at intervals of 2- 4 days. These are dark bluish-green when fresh, becoming lighter with exposure to the sun. The shells are thick, with paler green and white layers under the dark outer layer. When eggs are fresh, they are dark green, but become almost black with time. Emus are solitary creatures and although they often travel in large flocks where there is food, this is not a social behavior. Emus are not really social. Exception is of young birds, which stay with their father with certain period of time. Young birds stay close together and remain with the male for four months. They finally leave from them at about six months. Immediately after the sunset, the emu lie down to sleep, although it may rise up to eight times during the night for the purpose of defecation and feeding. On an average, the emu will awaken every one and half to two hours. They rise for a few minute, stands to defecate and feed. This interruption to sleep continues from 10 to 20 minutes. In this manner emu is disturbed from six to eight times a night. The actual duration of complete rest is being up to seven hours.

### Bio-security measures to be taken in emu farming/ breeding

- Farm should ideally be placed and away from the population.
- The fencing should be proper with adequate breeding facilities.

3. Proper disinfection procedures/ foot dips etc. should be maintained.
4. The quarantine sheds should be separate and away from other sheds.
5. Routine disease monitoring procedures like postmortem examination of dead birds and periodic sera antibody assay is recommended.
6. Water source should be tested for mineral, bacterial, chemical, contamination and pathogen load.
7. The other birds (parent, commercial or pure line etc.) and pets should not be reared/allowed to enter the same farm.
8. The brooding space should be optimum.
9. There should be provision of showers, change over and dips.
10. Proper storage of feed to prevent contamination should be made.
11. The water quality should be checked periodically and if contamination is seen it should be treated with any sanitizer.
12. There should be facility for disposing off/destroying the bedding / dead birds etc.
13. The equipment should be proper, properly disinfected and separated.
14. The farm should have a water sanitation system.

### **Indian agencies engaged in Emu farming, processing and marketing,**

1. Aa Moiz Emu Farms: 11/1/1917, Beside wiswrai garden function hall, Jaleeel farm, Armoor road, Mubaraknagar, Nizamabad - 503003, Telangana.
2. Aditya Emu Farm: chejjireddypadu, G.Konduru, Krishna dist., Vijayawada - 21229, Andhra Pradesh.
3. Adl Emu Farms & Feeds: village- vissannapeta, ramkri puram, Vijayawada - 520003, Andhra Pradesh.
4. Alma Emu Farms: Manikampalayam, Kaddapanallur, Bhavani - 638311, Tamil Nadu.
5. Asian Emu Farms: S. Block, 11B Thamizharasi Complex, Kovaipudhur, Coimbatore - 641042, Tamil Nadu.
6. Aasma Agrotech Farm: Lanja Taluka, Near National Highway-17, Ratnagiri - 416701, Maharashtra.
7. Agri-Biotek : Flat No:203, Akhila Apts, Indiranagar, Triumalagiri Post, Hyderabad - 500015, Telangana.
8. Ally Emu Farms: Lalton Road, Vpo Pamal, Ludhiana - 141012, Punjab.
9. Annapurna Trading Co. : Room No.- 2 & 3, Block A, Barisha Super Market, Kolkata - 700008, West Bengal.
10. Atharva Farms: ISMAIL KHANPET, SANGAREDDY, DISTT-MEDAK, Hyderabad - 502001, Telangana.
11. Bhargav Emu Farm: 5-33, Chattanpally Village, Shad Nagar, Mahabubnagar - 509216, Andhra Pradesh.
12. Chandigarh Emu Farms: Ambala road, zirakpur, Zirakpur - 190507, Punjab.
13. Emu Gujarat R&D Centre: 12, Paris Park, Nr. Ganesh Crossing, Chikodra Road, District-Anand, Anand - 388001, Gujarat.
14. G.V.V Emu Farms: No. 2226, T G Extension, Hoskote, Bengaluru - 562114, Karnataka.
15. J. J. Emu Farm & Hatcheries: Zarola Bochasan Road, At. P.O. Zarola, Ta. Borsad, Dist. Anand, Vadodara - 388590, Gujarat.
16. Kunwar Emu Farm & Hatchery: Village-Ganu, P.O. Marhwari, Near Daulatpur Chowk, Tehsil-Amb, Una - 174319, Himachal Pradesh.
17. L Patels Emu Farm & Hatcheries: No. 688/20, Vrajnagari, Nr. Sachin Tower, Syamal Road, Vejalpur, Ahmedabad - 380015, Gujarat.
18. Mass Emu Farming: Meerut Cantt., Meerut - 250001, Uttar Pradesh.
19. Royal Emu Farm & Hatcheries: Undera Koyali New Road, Opp. Ramdev Park Society, Main Road, At Undera, Vadodara - 391330, Gujarat.
20. Rajasthan Emu Farming Pvt. Ltd.: Kalwar Road, Hatoj, Jaipur - 302029, Rajasthan.
21. Sesa Emu Farming Pvt. Ltd.: 126, Surabhi tower, Vyara, District-TAPI, Surat - 394650, Gujarat.
22. Shiv Emu Farm: Shankarpura, Vadodara - 390012, Gujarat.
23. Sisa Emu Farms And Hatchery: SISA House, Sameer Complex, RS 71, Navsarjan Society, Pandesara, Surat - 394221, Gujarat.
24. Tallbird Emu And Agriculture Farm India Pvt. Ltd.: 4th Floor, Satva Avenue, Sama Savli Road, Sama, near avsar party plot, Vadodara - 390024, Gujarat.

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