

Reproductive Ability of Ceylon Jungle Fowls (*Gallus lafayettei*) after imported in Japan

By

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Summary : Ceylon Jungle Fowls (CJFs) are designated as the national bird of the Republic of Sri Lanka and are strictly protected by the government. The present paper reports the reproductive ability of CJFs after being imported to Japan. The production of the first and second filial generation between CJFs and Gifujidoris (*Gallus domesticus*) was successful.

Key Words : Ceylon Jungle Fowl, Reproductive Ability, Gifujidori, F1, F2

Ceylon Jungle Fowls (CJFs) are designated as the national bird of the Republic of Sri Lanka and are strictly protected in national parks and sanctuaries by the law of this country.

Continuous researches were carried out by ICHINOE from 1973 on the spot¹⁻⁴⁾, and trials to import were made under the condition of exchanging CJFs and Japanese Native Chickens.

After several trial by the Laboratory of Animal Reproduction, fortunately offspring from 2 females were obtained (but 2 birds died during the quarantine period, and another one never laid an egg after being imported). The results mentioned below were obtained from their family.

Remarks

- a) CJFs were very nervous and a change of environment made them apt to stop laying. Therefore, the completion of natural laying was not easy.
- b) As the fowls needed a higher amount of protein in their feed, the breeder must supply 10 heads of mealworm to each fowl per day, besides the supplement of green leaves.
- c) As the females have the habit of eating their own eggs immediately after laying them on the floor, the inclination of a bar above the floor was necessary (Photo. 1 and 2).
- d) When incubating eggs, the mother hen must be used. If the eggs were set in an incubator, most of the

hatched chicks would show deformity of curved legs, and within a week they would die.

e) Young fowl in a period of growth easily suffer from leukaemia. In that case, the survival rate is low. Adult fowl easily suffer from leukaemia at molting. To prevent this disease, feeding of high level protein such as mealworms is necessary.

Usually, to keep fixed number of the fowls, more than 10 babies must be obtained every year.

1) Breeding season of CJFs in Japan

a) Egg laying period and number of eggs in a year

Egg laying period : Late February-September

Number of eggs in a year : 20-32 eggs (Egg-shell has purple spots)

Egg weight : 25-32 g

Number of eggs in one clutch : 4-5 eggs, sometimes 3

Typical laying pattern :

Exam. 1) ○ - X - ○ - X - X - ○ - X - ○ - X - ○

Exam. 2) ○ - X - X - ○ - X - X - ○ - X - ○

Mark ○ : laying, X : non laying

b) Crowing period

Male fowls started their crowing from the end of January and finished in late August.

c) Fertility of eggs

In the peak of the egg-laying season, fertility showed 95~100%. But in late February and in early March, if they had started laying already, females were apt to avoid the male's attack. In late August, males started their molting, and therefore, in the above-mentioned

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period, getting fertile eggs was difficult.

d) Mating behavior of CJFs

Frequency of mating was very few. Therefore, it was very rare to get a chance to observe. Fortunately, the author observed two times. When a sharp cry was heard from the pen, the author rushed to the pen worrying that something had happened to the fowls. The female fowl was flying inside the pen with a sharp cries, and the male was running on the ground watching the flying female with excitement. As soon as the female come down to the ground, the excited male vigorously mounted the female. Consequently, plenty of feathers were scattered on the ground.

Generally in the pen, the shelter or trees should be prepared to protect the female from injury.

2) Hybrids between CJF and Japanese native chicken (*Gallus gallus domesticus*).

Hybrids between Jungle Fowls and native chickens have been tried in some countries. In Indonesia, hybrids between Green Jungle Fowl (*Gallus varius*) males and native females were obtained by artificial insemination for professional purposes. In the Philippines, Red Jungle Fowl (RJF ; *Gallus gallus gallus*) males were used to obtain hybrids with native females for increasing fighting power.

But no news has been reported on getting hybrids using CJFs artificially. The reason may be that the CJF are strictly protected as the National Bird of Sri Lanka, and native people believe, that if the hybrids between CJFs and native chickens appeared, a curse would surely happen in their family.

Fortunately, the authors got some hybrids (First filial generation) between CJF male and Gifujidori (Japanese Native Chicken ; *Gallus gallus domesticus*) females and succeeded to rear 4 male and 8 female chickens to be adult birds. The below mentioned characteristics were apparent.

a) Body weight of the hybrids

The body weight was about $1,100 \pm 64$ g in males while females were about 770 ± 40 g, at 30 weeks of age, respectively.

The body weights were middle weight between CJF and Gifujidori (CJF < F1 < Gifujidori). The standard body weight of CJF males is 850 g and that of CJF females is 580 g, while that of Gifujidori males is 1,600 g and that of females is 1,200 g, respectively.

b) Plumage of the hybrids

The appearance of CJFs, Gifujidori, and the hybrids are shown in Photo. 1 to 6, respectively.

In the plumage of the hybrids, male fowls showed somewhat brighter necks than Gifujidori and had a black lengthwise strip line in the center of each feather.



Photo. 1 Ceylon Jungle Fowl male



Photo. 2 Ceylon Jungle Fowl male and females (one female starting the laying)



Photo. 3 Gifujidori male and females

The breast showed red brown, and the tail showed a purple and greenish gloss never observed in Gifujidori's males.

The female hybrids generally showed brown color of pears. The edge of wings showed black spots. These were also observed in females of CJF.



Photo. 4 Hybrid (male) Ceylon Jungle Fowl male × Gifujidori female



Photo. 5 Hybrid (male)



Photo. 6 Hybrid (Female) Ceylon Jungle Fowl male × Gifujidori female

c) Comb type

The comb of CJFs showed a typical elliptical yellow belt in the center of the comb, but in the hybrids, the comb had not so clear a yellow belt, and was situated



Photo. 7 F₂ hybrid (male and female)



Photo. 8 Variety of comb type in F₂ hybrid male

more behind.

Jungle Fowls showed an oblique inclination, while the hybrids showed a bigger size than Jungle Fowls and the edge of the combs was roundish, similar to that of Gifujidori.

d) Crowing pattern

Researches on crowing patterns of Jungle Fowls and those of native chickens were performed by KUWAYAMA *et. al*⁵⁾. In this report, the crowing pattern of the hybrids was compared with CJFs.

The hybrids showed 2 crowing types : one showing a pause between the first and the second syllable followed by 2 to 5 syllables, resembling to CJFs (but CJFs consisted of 3 syllables), and another showing 4 syllables resembling to Gifujidori.

The crowing length : CJF was $1.52 \pm 0.01 \text{ sec}^{5)}$, Gifujidori was $2.62 \pm 0.07 \text{ sec}^{5)}$, and hybrids was about 1.6 sec, respectively.

3) F₂ hybrids

The authors succeeded to produce second filial generations crossing between F₁ males and females.

Four males and 2 females of the hybrid were used to

obtain the following characteristics.

a) Body weight

Body weight of F2 fowls was $1,000 \pm 46$ g in the male, and 675 g and 725 g in the female.

b) Plumage

As shown in photo. 7, the F2 males showed almost the same color as that of Gifujidori males, but on the whole, were somewhat more sober than Gifujidori.

The F2 females showed almost the same plumage as that of CJF females.

c) Comb type

As shown in photo.8, the F2 males showed almost the same as Gifujidori males, but a slightly yellow trace was observed in the posterior part of the comb. On the whole, it was somewhat thinner than Gifujidori males.

d) Crowing pattern

Crowing pattern of F2 males showed almost the same pattern as the Gifujidori males but its tone was higher and the tone of 1 syllable was supposed to be decreased.

e) Fertility of the F2 hybrids

Females of F2 didn't lay eggs. Crossing between F2 male and Gifujidori females, got several fertile eggs, but all of them stopped development during artificial incubation in an incubator and never hatched.

LOTSY and KUIPER⁶⁾ reported that they could get small type hybrids having the activity to survive. When F1 male was back crossed to the native females, they could find fertility. They could get F2 offsprings, but they were difficult to rear. Similar results were also

reported by DERANIYAGALA⁷⁾.

The above mentioned experiments were performed on the spot in Sri Lanka, and no report was found of imported fowls in foreign countries, especially in Japan.

This report may serve as reference data concerning the reproductive ability of imported CGFs.

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本邦に輸入後におけるセイロン野鶏 (*Gallus lafayettei*) の繁殖能力

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要約：セイロン野鶏は、スリランカ共和国の国鳥として手厚く保護されているものであるが、本報告は、本邦に導入後におけるその繁殖性を検討したものである。セイロン野鶏と岐阜地鶏との間のF1及びF2が作出できることを示した。

キーワード：セイロン野鶏, 繁殖能力, 岐阜地鶏, F1, F2

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