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Research Article

Sexing in pigeons by phenotypic method

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Abstract

Out of 24 characteristics at the age of squab 1, 10 and 20 days the identifying characteristics of male and female were 4.17% each. When chicks are reached in 30 days there were 50% great changes where 12 characteristics can be point out. 120 days there only 5 characteristics (20.83%), 180 days 2 (28.33%) and 150-180 days 2 (maximum 6 months) (8.33%) characteristics are changed on its sex. Congenital characteristics were only one which was just on the length of down feather; genetical 9; measurable characteristics 4 and others which were amalgamated either male or female chick were 10. Result suggested that at the 30 days (1 month, 50%) and 120 days (4 months, 20.83%) are the peak time for identifying male and female pigeons. Highest percentage on characteristics changes were found in 30 days (50%) and the lowest 1, 10, 20 days (4.17%) and reproductive behaviour at 120 days (4 months) were the second identifying characteristics which may help for sex determination. Finally day-wise sex determination in pigeons were 1 day (4.17%), 10 days (8.34), 20 (12.51), 30 (62.51), 120 (83.34), 180 (91.67) and 150-180 (100%) respectively. Considering 5-6 months of age of the chicks' 91.67-100% sex determination could confirm.

Keywords: Pigeon sexing; Chicken sexing.

Introduction

Pigeons have no sexual dimorphism. In squab there are no points for its sex determination but in adult a lot of points for its gender with huge sexual behaviours. Males are normally large in size, bright colour and aggressive than female. It's very tough to find out the actual sex in squab from hatch to three months of age. After covering of body feather at 21-30 days there some characteristics such as head size, narrow/broadness of beak and aggressiveness slight helps to sex determination. But most cases this was not specific on its gender. Moreover, in pigeons it shows non-vocal sound at the squab stage. In case of pigeons the sex chromosome of male is ZZ and female ZW. Only in Texan Pioneer which is broiler breed shows the specific sex determination after hatch. On the other hand Levi 1941 suggested that after hatch the down feather of body and head indicates the sex. Long day's experiments could indicate the sex by observing the cloacal lip of the squab but this is very sophisticated to identify. Actual method is that the presence of sex chromosomes. After plucking of any feather of the squab then a drop of blood test analysis is the best solution for its sex determination under the microscope. In order to maintain an ideal farm its sex determination is important. Other wise

Table 1. Showing the differences between male and female on some features

Sl.	Features	Male	Female
1	Down feather at born	short	long
2	Aggressiveness	high	low
3	On palm then pull	tail upwards	tail downwards
4	Grasping then pulling beak	push backwards	silent
5	Beak	large	small
6	Forehead	rounded	flat
7	Head	big	small
8	Eye	small and locate lower the face	big and locate front or middle of face
9	Neck	long and thick	short and compact
10	Wing	large	small
11	Body	slim and large	bulky and small
12	Vent (mm)	narrow (1-2)	broad (above 2)
13	Cloacal lip	present	absent
14	Waddle	bigger	smaller
15	Middle toe	larger	smaller
16	Sound	cooing	squeak/peep
17	Nature	clever	silent
18	Body feather and crown	ornamental and bright, higher	casual feathers and less bright, lower
19	Tail dragging and turn	dragging with 360^0	not dragging and 180^0
20	Nesting tendency	high	later in the day
21	Average weight (g)	240-300	200
22	Length (mm)	345	325
23	Pelvic girdle	narrow	broad
24	Incubation	09-10 am to sunset	whole night

Table 2. Showing the expression at a certain days

Points	Days	No. of expression	%
Down feather at born	1	1	4.17
Aggressiveness	10	1	4.17
On palm	20	1	4.17
Grasping then pulling beak	30	12	50
Beak			
Forehead			
Head			
Eye			
Neck			
Wing			
Body			
Vent (mm)			
Cloacal lip			
Waddle			
Middle toe			
Sound	120	5	20.83
Nature			
Body feather and crown			
Tail dragging and turn			
Nesting tendency			
Average weight (g)	180	2	8.33
Length (mm)			
Pelvic girdle	150-180	2	8.33
Incubation			

Table 3. Real time for sexing the pigeons

Days	Characteristics	Total	Characteristics changed	% of sex determination
1	down feather	1	4.17	4.17
10	aggressiveness	1	4.17	8.34
20	on palm then pull	1	4.17	12.51
30	catch beak, beak, forehead, head, eye, neck, wing, body, vent, cloacal lip, waddle, middle toe	12	50	62.51
120	sound, nature, body feather and crown, tail dragging and turn, nest tendency	5	20.83	83.34
180	weight, length	2	8.33	91.67
150-180	pelvic girdle, incubation	2	8.33	100

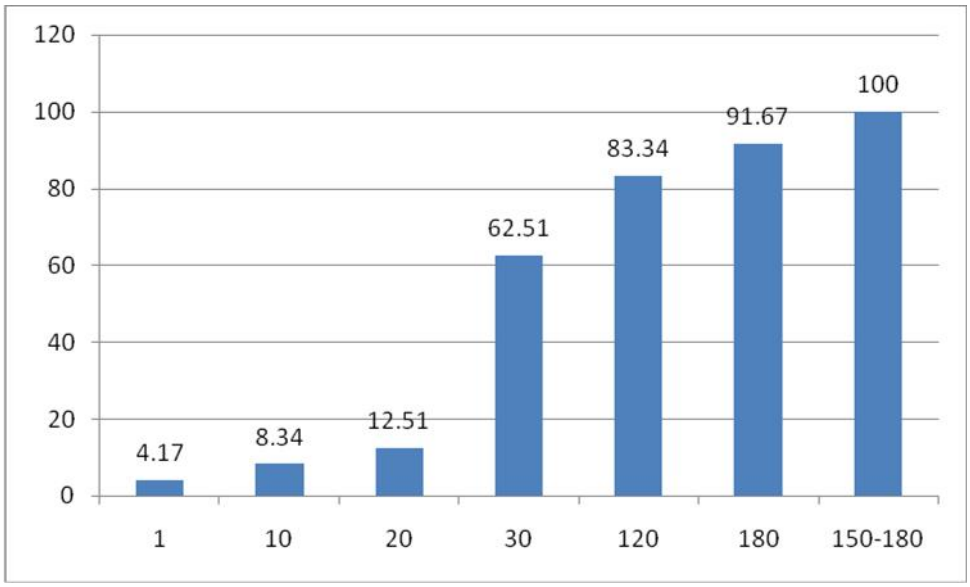

Diagram 1. Day-wise sexual response in pigeons

Table 4. Showing different characteristics based on criterion with its number

Criteria	Characteristics	Total
Congenital	Down feather	1
Measured	Beak, wing, weight, length	4
Genetical	Aggressiveness, vent, cloacal lip, sound, body feather and crown, tail dragging and turn, nest tendency, pelvic girdle, incubate	9
Miscellaneous	On palm, catch beak, forehead, head, eye, neck, body, waddle, middle toe, nature	10

it will be hazardous in the long run mainly it's good pairing. Most farmers' choice only body size and colour of the pigeons. From 1900 to date now the sex determined are allowed by chromosomal theory (Levi 1941). The study of genetic behaviour of pigeons was completed by Gilbert 1947. The sex of pigeons, ring doves and its hybrids the scientific study by Painter and Cole in 1943. A study was found on roller and tumbler pigeons sex ratio by Entrikin and Erway 1972 and Kabir 2012.

Materials and Methods

Analysis of characteristics

A lot of characteristics pigeon have for differentiating male and female. But 5-6 months is needed to surely identify the sex. Keen observation to the squab/chick corresponding with its parents helped for this purpose. Day old pigeon (DOP) to complete maximum maturation continuous observation had taken. Non vocal sound of chick and semi intensive rearing also helpful and group feeding and intimation with other birds it showed a lot of stereo behaviour. Due to domestication all sorts of characteristics could maintain easily (Table 1).

Day-wise observation

First observation was focused at 1 day and this is very sophisticated time. This time there only down feather, growth rate and size indicate some points of its sexing. But this is not more authentic. Then after fledging at 30 days its movement and behaviour and interact with other pigeons slightly could focused on sexing. Finally at the third stage observation (120 days) mainly males are shown its vocal and continuous cooing by seeing other pigeons especially female pigeon. In that stage females are gentle and feminine appearance which attract to males voice. This is the real time for sexing the pigeons (Table 2, Table 3, Diagram 1).

Emphasis on breeding behavior

At the age of minimum 3 months were key points on first breeding behaviour. Males have slight vocal sound, size of various parts was observed by naked eyes. Pigeons showed maximum sexual differentiation in breeding stage which diagnoses its sex. Hormonal secretion plays a major role on both the sex to form a real pair. This time moulting starts and ornamental feathers indicate the different sex (Table 4).

Results and Discussion

Research of Entrikin and Erway in 1972 found total 209 squabs of roller and tumbler pigeons where male and female ratio was 109:100. Another experiment of Kabir 2012 during observing the tumbling behaviour of pigeons found total 144 squabs and the sex ratio of male and female was 97:47. In Bangladesh large size pairing is the main cause of producing huge males. General appearance and movements and the time of strutting is important for sexing pigeons (Hazard, 1922). The young pigeons squeaks longest in their nest is hen (Eaton, 1922). Most of the cases the large squab will be male and this probability is 60% (Rahman, 1999).

Conclusion

Though at 30, 120 and 150 days the squabs sex more or less confirmed but chromosomal test is the latest solution. Not knowing the sexing in squabs rearers fall a serious problem in its productivity. Need more research on pigeon sexing.

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