

SOME OBSERVATION ON ECO- TECHNICAL PARAMETERS OF TURKEY IMPORTED FROM HUNGARY

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ABSTRACT

Huba broiler turkey survival observed from birth to 20 weeks old is 97.14 – 100%. At the age of 20 weeks, the bodyweight of line B remains the highest – Male: 5604.6 g/bird, female 4207.8 g/bird with the lowest feed consumption/kg of weight gain of 3.27. Next come crossed BCs with 5272 g/bird, 3957.1 g/bird and 3.54 kg; and crossed CBs with 4939.2 g/bird, 3597.1 g/bird and 3.71 kg respectively. C turkeys gain the lowest bodyweight of 4685.4 g/male and 3345.5 g/female with the highest feed consumption/kg of weight gain of 3.97. For turkeys at the pre-laying stage (26 weeks of age), the bodyweight of line B is the highest: Male 6885.3 g, female 4820.3 g then crossed BC of 6500 g/male, 4511.8 g/female; crossed CB of 6145.5 g/male, 4276.5 g/female; and lastly line C of 5738.0 g/male, 3744.2 g/female. Egg production/hen is 49.08 eggs for line B at 21 weeks of laying, 30.09 eggs for line C at 18 weeks, 46.15 and 44.37 eggs respectively for BC and CB at 16 weeks of laying.

INTRODUCTION

Turkeys (*Melagis gallopavo*) which originated from South America in the 13th century have a fast growth rate, big bodyshape and weight of 6-16 kg/male and 4-9 kg/female at the maturity age. Turkey is delicious with the protein level of 19.2-21.6%, fat of 1.2 – 2.2% , and ashes of 0.9 – 1%.

Turkey farming has been developing speedily in France, Germany, the U.S.A, Hungary, Poland, Crench, Russia and Bungary.

Turkey farming has been popular in Vietnam for long, however small-scale, dispersed, unclearly originated, limited in production, extensive and low in economics. To step by step restore and enhance Turkey farming in Vietnam, it is, in addition to present ones, necessary to import good breeds, research, select and work out technical measures for an appropriate farming procedures.

In May, 2006, POREC received from the National Institute of Animal Husbandry (NIAH) – Ministry of Agriculture and Rural Devvelopment 990 Huba turkey eggs imported from MGE. Thus, the research was undertaken to:

- Acknowledge biological features.
- Keep for adaptation, observe and determine their production for later selection.
- Determine economic efficiency, based upon which to give proposal for Turkey farming development in Vietnam.
- Give technical procedures for Turkey farming.

MATERIALS AND METHOD

Materials

Huba turkeys imported from Hungary.

- Copper layers and broilers.

- Bronze layers and broilers.
- Crossed layers and broilers between Copper male x Bronze female.
- Crossed layers and broilers between Bronze male x Copper female.

Duration: 2006-2009 at the Cam Binh Poultry Research Station under POREC-NIAH.

Method

Care regime

Table 1. Nutritional values of feed during fattening [2]

Parameter	Birth-4wks	5-8 wks	9-12 wks	13-16 wks	17-20 wks
ME (Kcal)	2900	3000	3000	3100	3100
Protein (%)	26	24	21	18	15
Calcium(%)	1.34	1.41	1.03	1.06	0.91
Phosphorus(%)	0.91	0.89	0.78	0.77	0.67
Lysine(%)	1.76	1.51	1.2	1.07	0.96
Methionine (%)	0.47	0.52	0.35	0.35	0.33

Table 2: Nutritional values of layer [2]

Parameter	Birth-4wks	5-14wks	15-26 wks	27-32wks	>32wks
ME (Kcal)	3000	2900	2900	2850	2750
Protein (%)	25	19.14	14.5	15	16.5
Calcium(%)	1.29	1.26	0.86	1.74	3.39
Phosphorus(%)	0.83	0.72	0.7	0.65	0.65
Lysine(%)	1.56	1.21	1.0	1.0	1.1
Methionine (%)	0.43	0.42	0.4	0.43	0.46

Procedure of care

Birds are separated according to broiler and layer diets, caged and scavenged.

0-4 wks: Birds are completely caged with care and veterinary procedures as given by MGE [3].

5-12 wks: Caging is interrupted by scavenging. Birds during the first days are released once or twice a day, each of which is prolonged from 30 minutes to 1 hour in the sun with no frost in the morning and sunset in the afternoon to enhance their adaptation to the natural environment. Scavenging time is increased, grassing ground widened and complete feed reduced by 30-50% in the daily diet the next days.

For broiler from 13-19 wks: Scavenging time is increased 5 – 6 hours per day. At the last 2 weeks, birds are fattened with additional feed to get ready for slaughter.

For layer from 13 – 19 wks: Feed, in which the proportion of crude fibre, calcium and energy but protein is enhanced to prevent them from get fattened before laying, is increased based upon weekly weighing.

At all the stages, turkeys under bad weather (rain, cold, storm) are housed and enforced with additional feed (2- 3 times as normal).

Parameters to observe and method to determine: Morphological features, survival, growth rate

Growth rate:

Bodyweight: Weighed everyweek in the morning before feeding.

Feed consumption/bird (kg). Feed consumption/kg of weight gain (kg)

Reproduction:

Maturity (at which they give the first egg). 5% production, egg production.

Incubation parameters: Fertility (%), hatchability/total hatched (%), hatchability/fertile eggs (%).

RESULTS AND DISCUSSION

Table 3. Hatchability of Huba turkeys

Parameter	Block 1	Block 2		Block 3	
	Line C	Line B	Line C	Crossed BC	Crossed CB
Day of incubation	13/5/06	21/5/06	21/5/06	1/6/06	1/6/06
Egg number	186	136	233	170	155
Infertile eggs	36	48	80	84	64
Fertility(%)	80.64	64.71	65.67	50.59	58.71
Day of hatch	10/6/06	18/6/06	18/6/06	29/6/06	29/6/06
Chick number	125	72	125	63	75
Hatchability/total hatched (%)	67.2	52.94	53.65	37.06	48.39
Hatchability/fertile eggs (%)	83.33	81.82	81.7	73.26	82.42
Grade 1 chick/fertile eggs	60.61	66.67	50.92	54.46	43.01

After 2 batches of incubation, the fertility of line C is 73.16%, of line B 64.71%, of crossed CB 58.71% and of crossed BC 50.59%.

The hatchability/total hatched of line C is 67.2%, of line B 52.97%, of crossed CB 48.39% and of crossed BC 37.06%. Line C is higher in hatchability than the rest.

Table 4. Color feature and proportion

Parameter	Unit	Block 1	Block 2		Block 3	
		Line C	Line B	Line C	Crossed BC	Crossed CB
Copper	%	100.0	-	100.0	38.1	6.67
Bronze	%	-	100.0	-	57.14	88.0
Silver grey	%	-	-	-	3.17	-
White	%	-	-	-	1.59	5.33

Table 4 shows that lines C and B have pure copper and bronze colors. Crossed CBs have the highest bronze of 88.0%, then copper of 6.67% and white of 5.33%. Crossed BCs have the bronze of 57.14%, then copper of 38.1%, silver grey of 3.17% and white of 1.59%.

Huba broiler

Table 5. Survival of Huba broilers

Parameter	Birth	1 wk	4	8	12	15	20	0-20
			wks	wks	wks	wks	wks	wks
Line C Chick no	35	35	34	34	34	34	34	
Survival (%)	-	100.0	97.14	100	100	100	100	97.14
Line B Chick no	35	35	35	34	34	34	34	
Survival (%)		100.0	100.0	97.14	100.0	100.0	100.0	97.14
Crossed Chick no	35	35	34	34	34	34	34	
BC Survival (%)	-	100.0	97.14	100.0	100.0	100.0	100.0	97.14
Crossed Chick no	20	20	20	20	20	20	20	
CB Survival (%)	-	100.0	100.0	100.0	100.0	100.0	100.0	100.00

Survival of Huba broilers from birth to 20 weeks old is 97.14 – 100%.

Table 6. Bodyweight at different weeks of age

Wks	Line C		Line B		Crossed BC		Crossed CB		
	X ± mx (g/bird)	Cv (%)	X ± mx (g/ bird)	Cv (%)	X ± mx (g/ bird)	Cv (%)	X ± mx (g/ bird)	Cv (%)	
1	100.86±1.8	10.31	105.7±2.3	12.46	126.2 ±1.7	7.9	121.5 ±2.3	8.45	
4	538.82±9.8	10.55	548±21.2	22.57	596.1 ±10.4	10.2	531 ±14.7	12.42	
8	1497.1±30.2	12.23	1618.24±62.3	22.1	1607.27±30.4	11.0	1457.5 ±42.1	12.92	
12	2452.94±64.6	15.53	3000±101.5	19.43	2843.94±63.6	13.0	2603.5±90.6	15.57	
15	3157.06±87.0	16.07	3906.06±147.3	21.66	3653.7±108.1	15.4	3259.1±140.4	14.29	
20	M	4685.4±59.1	8.74	5604.6±143.2	11.98	5272±127.9	8.05	4939.2±155.2	10.88
	F	3345.5±27.7	8.77	4207.8±60.04	8.07	3957.9±99.9	13.4	3597.1±93.4	11.9

n=35
birds

Table 7. Feed consumption/bird (kg)

Line	1 wk	4 wks	8 wks	12 wks	15 wks	20 wks
Line C	0.126	0.868	3.01	6.63	9.84	15.58
Line B	0.126	0.868	3.01	6.63	9.84	15.8
Crossed BC	0.133	0.875	3.21	7.00	10.47	16.05
Crossed CB	0.198	0.847	3.14	6.84	10.25	15.85

Table 8. Feed consumption/kg of weight gain (kg)

Line	4 wks	8 wks	12 wks	15 wks	20 wks
Line C	1.61	2.07	2.67	3.09	3.97
Line B	1.47	1.88	2.23	2.53	3.27
Crossed BC	1.47	1.99	2.46	2.86	3.54
Crossed CB	1.59	2.16	2.63	3.04	3.71

For broilers at 20 weeks of age, line B averages the highest bodyweight of 5604.6 g/male and 3345.4 g/female but the lowest feed consumption/kg of weight gain of 3.27 kg. The next come crossed BC with the respective results of 5272 g/male, 3957.1 g/female and 3.54 kg; crossed CB with 4939.2 g/male, 3597.1 g/female and 3.71 kg; and lastly line C with 4685.4 g/male, 3345.5 g/female and 3.97 kg.

Huba layers

Table 9. Survival of Huba layers

Line	4 wks	14 wks	19 wks	21 wks	26 wks	32 wks	48 wks	Birth-48 wks
C	95.51	97.18	99.52	100	100	100.0	100	95.56
B	97.61	100	100	100	100	100.0	100	92.5
BC	97.5	100	100	100	100	100.0	100	97.22
CB	95.35	100	100	100	100	100.0	100	96.43

Survival of turkey flocks throughout stages is from 92.5 to 97.22%.

Table 10. Bodyweight at different weeks of age

Wks Sex	Line C (n=50 birds)		Line B (n=30 birds)		Crossed BC (n=30 birds)		Crossed CB (n=30 birds)		
	X±mx	Cv	X±mx	Cv	X±mx	Cv	X±mx	Cv	
	(g/bird)	(%)	(g/ bird)	(%)	(g/ bird)	(%)	(g/ bird)	(%)	
1	111.3±1.08	10.6	96.55±1.95	13.07	120±1.5	10.1	121±2.34	8.67	
4	410.2±4.62	11.9	478.4±12.08	15.57	518±17.05	14.72	499±15.3	13.68	
8	1167.2±17.7	15.5	1266.1±31	15.1	1410±42.5	13.47	1306.8±50.9	16.96	
12	2208.2±36.2	16.7	2551.3±60.1	14.5	2705.5±86.8	14.35	2482.4±103.1	17.12	
15	2924.8±48.8	16.6	3389±80.7	13.04	3507.5±125.2	15.96	3246.7±149.6	17.8	
17	M	3907.3±60.1	10.64	4918.2±168.6	16.08	4518.2±108.9	7.99	4204.2±135.5	11.2
	F	2928.5±25.8	9.31	3679.4±70.2	10.8	3491.1±74.3	11.26	3158.8±89.2	12.9
23	M	5241.7±66.5	8.8	6258.2±157.3	11.8	5854.6±135.6	8.21	5516.7±182.9	11.5
	F	3543.5±31.5	9.4	4505.6±66.4	8.33	4248.2±94.4	11.76	3958.8±105.3	12.2
26	M	5738.0±67.4	7.72	6885.3±193.7	11.6	6500±165.1	6.72	6145.5±217.9	11.76
	F	3744.2±26.5	7.48	4820.3±78.1	9.17	4551.8±91.0	10.58	4276.5±113.2	12.13

At 26 weeks of age, line B has the highest bodyweight of 6885.3 g/male and 4820.3 g/female. The next are crossed BC with the respective parameters of 6500 g/male and 4511.8 g/female, crossed CB of 6145.5 g/male and 4276.5 g/female, and lastly line C of 5738.0 g/male and 3744.2 g/female.

Table 11. Sexual maturity (days of age)

Line	Line C (n=99 birds)	Line B (n=29 birds)	Crossed BC (n=21 birds)	Crossed CB (n=27 birds)
Age of first egg	193	190	213	212
Age of 5%	224	200	227	212
Age of 50%	277	252	243	242

Line B gives the first egg earliest at 190 days of age, then line C at 193 days of age and crossed BC and CB at 212 and 213 days of age respectively.

Table 12. Average egg production/hen/week, laying rate, feed consumption/10 eggs

Wks	Line B (n=29 birds)			Line C (n=99 birds)		
	Avr egg production /hen/week (egg)	Laying rate (%)	Feed cons/10 eggs (kg)	Avr egg production /hen/week (egg)	Laying rate (%)	Feed cons/10 eggs (kg)
29	0.36	5.16	-	-	-	-
30	0.97	13.81	20.25	-	-	-
31	1.17	16.67	16.79	-	-	-
32	1.77	25.24	11.10	0.4	5.66	-
33	1.67	23.81	11.76	0.42	6.05	47.8
34	1.77	25.24	11.10	0.57	8.11	35.2
35	2.33	33.3	8.43	1.4	20.0	14.34
36	3.47	49.25	5.66	2.37	33.9	8.72
37	2.8	40.00	7.02	1.93	27.61	10.40
38	2.03	29.05	9.68	2.22	31.76	9.04
39	1.63	23.33	12.05	3.62	51.73	5.55
40	2.8	40.00	7.02	3.29	47.02	6.10

41	3.47	49.52	5.66	3.51	50.14	5.72
42	3.46	49.4	5.68	2.2	31.36	9.12
43	3.31	47.29	5.94	1.76	25.21	11.40
44	3.03	43.35	6.48	1.42	20.31	14.13
45	3.28	46.8	5.99	1.2	17.15	16.6
46	2.69	38.42	7.30	1.17	16.74	17.1
47	2.52	35.96	7.8	0.93	13.28	21.6
48	2.55	36.45	7.7	0.93	13.28	21.6
49	2.0	28.57	9.82	1.02	14.57	19.7
Total	49.08			30.09		
Avr		33.36	9.16		23.88	16.12

Table 13. Average egg production/hen/week, laying rate, feed consumption/10 eggs

Wks	Crossed BC (n=21 birds)			Crossed CB (n=27 birds)		
	Avr egg production /hen/week (egg)	Laying rate (%)	Feed cons/10 eggs (kg)	Avr egg production /hen/week (egg)	Laying rate (%)	Feed cons/10 eggs (kg)
33	1.15	16.37	17.3	0.76	10.88	28.87
34	2.52	35.98	8.1	2.29	32.65	9.63
35	3.7	52.91	5.4	3.81	54.42	5.77
36	3.52	50.26	6.0	3.52	50.34	6.08
37	2.33	33.33	9.3	3.38	47.62	6.3
38	2.89	41.27	7.5	3.33	47.62	6.3
39	2.89	41.27	7.2	3.24	46.26	6.25
40	3.67	52.38	5.4	3.38	48.3	5.82
41	3.74	53.44	5.3	3.48	49.66	5.66
42	3.67	52.38	5.4	3.38	48.3	5.82
43	3.26	46.56	6.1	2.86	40.82	6.88
44	2.89	41.27	6.9	2.57	36.73	7.7
45	2.67	38.1	7.5	2.52	36.05	7.8
46	2.7	38.6	7.4	1.9	27.21	10.3
47	2.15	30.69	9.3	2.05	29.25	9.6
48	2.4	34.39	8.3	1.9	27.21	10.3
Total	46.15			44.37		
Avr		41.2	7.65		39.58	8.69

Egg production/hen at 21 weeks is 49.08 eggs in line B, that of line C is 30.09 eggs at 18 weeks and those of BC and CB are respectively 46.15 and 44.37 eggs at 16 weeks. Feed consumption/10 eggs during 21 weeks of laying are 9.16 kg and 16.12 kg respectively for line B and C, and those of BC and CB are 7.65 kg and 8.69 kg during 16 weeks of laying.

Table 14. Bodyweight during laying

Line	First egg		5% production		50% production		38 weeks	
	X ± mx (g)	Cv (%)	X ± mx (g)	Cv (%)	X ± mx(g)	Cv (%)	X ± mx (g)	Cv (%)
Female C	3835±34.2	9.36	3876.1±27.3	7.4	4183.8±54.7	10.54	4168±38.3	9.05
Female B	4938.3±80.3	8.9	5016.7±80.6	8.79	5500±123.9	9.56	5575±102.2	9.70

Female BC	4814.5±114.9	11.6	5067.9±145.2	15.2	5218.5±142.1	14.14	5294.3±147.6	14.20
Female CB	4330.9±140.7	14.9	4621±142.5	14.13	4778.6±126.2	12.1	4804.7±150.7	14.37

Table 15. Egg weight

Line	First egg	5% production		50% production		38 weeks	
	X (g)	X ± mx (g)	Cv (%)	X ± mx (g)	Cv (%)	X ± mx (g)	Cv (%)
C	67.2	72.2±2.75	8.49	76.4±0.59	7.65	74.4±0.56	6.9
B	72.0	76.7±1.24	3.6	75.4±1.38	10.26	78.2±0.8	8.1
BC	66.5	73.6±1.05	7.02	76.0±0.77	5.57	78.5±1.4	11.17
CB	66	72.4±2.74	5.28	73.9±1.00	12.99	74.4±0.90	7.18

Table 16. Hatchability

Parameter	Line B	Line C	Crossed BC	Crossed CB
Total egg	981	2363	713	901
Fertility (%)	87.29	91.01	96.6	87.97
Hatchability/total egg	71.56	78.12	79.27	80.28
Hatchability/fertile eggs (%)	77.77	81.23	82.04	86.14

Crossed BC has the highest fertility of 96.6%, the next is line C of 91.01%, crossed CB of 87.97% and line B of 87.29%.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Survival of Huba broilers from birth to 20 weeks of age is 97.14 – 100%.

For broilers at 20 weeks of age, line B has the highest bodyweight of 5604.6 g/male, 4207.8 g/female and the lowest feed consumption of 3.27 kg. Next come crossed BC with the respective results of 5272 g/male, 3957.1 g/female and 3.54 kg; and crossed CB of 4939.2 g/male, 3597.1 g/female and 3.71 kg. Line C has the lowest bodyweight of 4685.4 g/male, 3345.5 g/female and the highest feed consumption of 3.97 kg.

For layers at 26 weeks of age, line B has the highest bodyweight of 6885.3 g/male, 4820.3 g/female; then crossed BC of 6500 g/male, 4511.8 g/female; crossed CB of 6145.5 g/male, 4276.5 g/female; and lastly line C of 5738.0 g/male, 3744.2 g/female.

Egg production/hen is 49.08 eggs for line B at 21 weeks of laying, 30.09 eggs for line C at 18 weeks, 46.15 and 44.37 eggs respectively for BC and CB at 16 weeks of laying.

Recommendation

It is recommended that reproduction of present turkey flocks as well as their offsprings in Vietnam's climate be observed.

REFERENCES

1. Guidelines for keeping Huba turkey.2006. Association of Hungarian Small Animal Breeders for Gene Conservation – MGE
2. John D. Summers, Steven Leeson. Turkey Nutritional Handbook. Department of Animal and Poultry Sciences. Agricultural College - Ontario, University of Guelph – Canada.
3. Bui Quang Tien, Phung Duc Tien et al. Study on production of White turkeys imported from France. Scientific report, National Institute of Animal Husbandry, Hanoi, April, 1998.
4. Nguyen Van Thien (1996). Statistical terminology of breed genesis in animal farming. Agriculture Press, Hanoi, page 191-194.