

## Effect of Housing System and Protein Level on Growth of Iraq White Turkeys

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**I**N THIS study 96 poults of Iraq White Turkey were used to study the effect of type of housing and protein level on body weight, weight of gain, feed efficiency and feed consumption of Iraq Turkeys.

The floor rearing was found to be more successful than the cage rearing. Body weight and gain weight were high for birds maintained on floor when compared to those in cages. Feed consumption and feed efficiency were poorer in caged birds than in floor reared turkeys. The incidence of breast blisters were found only in caged birds.

Body weight was found to be significantly affected by the protein level. Males and females required 18 % protein from 12-16 weeks of age and 16 % protein from 16-24 weeks of age for maximum growth.

Body weight, gain weight, feed consumption and feed efficiency were affected by sex. They are greater in males than females.

The stimulatory effect of type of housing on body weight in turkeys was demonstrated by some workers. Tikk (1967) found that the type of floor rearing pens had more advantages in body weight of Broad Breasted Bronz. However, Muller and Manely (1972) & Carson *et al.* (1973) reported that caged turkeys gained significant more weight than did floor birds. Carson *et al.* (1973) noted that feed efficiency was significant poorer in caged birds than floor reared birds. Muller and Manely (1972) & Carson *et al.* (1973) reported that the incidence of breast blisters was greater in cage rearing birds than in the floor system poults.

Voitle *et al.* (1972) found a positive effect on body weight and gain weight by increasing the level of protein. Touchburn *et al.* (1963) reported significant differences in gain weight between the two sexes.

Voitle and Harms (1972) found that the total feed consumption of turkeys was greater for the high protein birds than the low protein poults. Summers *et al.* (1968) found no significant differences in feed efficiency when the

birds fed ration with various levels of protein. However, Jensen *et al.* (1965) noted better feed efficiency by using rations with protein series 18, 16, 14% for females and 20, 18, 16% for males at 8-12, 12-16 and 18-20 weeks of age respectively.

Studies on the protein requirement of turkey were reported by Kratzer *et al.* (1956). They found that protein requirement decreased from approximately 20% at 8 weeks of age and 15% at 16 weeks of age to 13.5% at 20 weeks of age. Summers *et al.* (1968) suggested that the proper levels of protein in the diet of Large White turkeys were about 34, 32, 24, 22 and 20% during the periods 0-4, 4-8, 8-12, 12-16 and 16-20 weeks of age respectively.

The objectives of this study are : 1-To determine the effect of protein level on growth of Iraq White turkeys, 2- to evaluate the relative merits of conventional floor pens versus cages on growth of Iraq White turkeys.

### Material and Methods

This investigation was carried out from 11/10/1979 to 3/1/1980 on the turkey flock of the Poultry Research Center in Bakragou of the Agricultura Experimental Station, Sullaymania University, on 48 female and 48 mal Iraq White turkey. All poults were placed on floor pens and fed ration wite 28% protein from 0-12 weeks of age. The two sexes were separated at 12 weeks of age, when this study began. Half of the birds from each sex were transferred randomly to individual cages, while the remaining birds (24 ♂ and 24 ♀) continued rearing on the floor pens. At 12 weeks of age also caged birds and floor birds were equally divided to two feeding groups (each group 12 -- and 12♀), high protein level and low protein level. The high protein group recieved at libitum grower deit, which containing 18% protein during the period 12-16 weeks of age, decreased to 16% protein during the period 16-24 weeks of age. The low protein groups fed ration containing 16% protein and 14% protein in the two periods (12-16 and 16-24 weeks of age). At the end of the study, two incidence of breast blisters were found on the caged birds.

Body weight and dfeed consumption were recorded and weight gain& feed efficiency were calculated every 28 days from 12 to 24 weeks of age. Data were analyzed by application of the analysis of variance test (Snedecor, 1956).

### Results and Discussion

Body weight results are presented in Table 1. Body weight at various ages was affected by housing systems. It was high for birds maintained on floor than those in cages. At 24 weeks of age, caged birds weighted only 3.525 kg while those on litter floor weighted 3.707 kg. Tikk (1967) found also that floor pens caused an increase in the average weight of turkey birds.

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Table 1 shows also that birds, which were fed a diet containing high protein levels, weighed from approximately 184 to 303 gram during the period 16-24 weeks of age more than the poult s which were fed diet with low protein levels. It appears, that the higher levels of protein resulted in slightly heavier body weights. This result is in agreement with Voitle *et al.* (1972).

For maximum growth, Iraq White turkey required 18% protein from 12-16 weeks of age and 16% protein from 16-24 weeks of age (Table 1). Similar results were obtained for male turkeys by Jensen *et al.* (1965). These protein values were intermediate between those reported by Kratzer *et al.* (1965) and Summers *et al.* (1968).

Body weight was affected also by sex. Body weight of males was greater than those of the females (Table 1).

TABLE 1. Effect of different rearing systems and protein levels on body weight (gram) at different ages.

Age wk.	Protein level	Cage		Floor		Average
		♂	♀	♂	♀	
12	High	1481.7	1135.0	1561.7	1190.8	1342.3
	Low	1549.2	1159.2	1482.5	1226.7	1354.4
	Average	1331.3		1365.4		
16	High	2410.0	1907.5	2629.2	1919.2	2216.5
	Low	2385.0	1769.2	2281.7	1695.0	2032.7
	Average	2117.9		2131.3		
20	High	3385.0	2460.0	3576.7	2463.3	2971.3
	Low	3210.0	2205.0	3379.2	2338.3	2783.1
	Average	2815.0		2939.4		
24	High	4430.0	2978.3	4601.7	3058.3	3767.1
	Low	3952.5	2738.3	4278.3	2888.3	3464.4
	Average	3524.8		3706.7		



Statistical analysis showed that body weight was affected significantly by type of housing ( $p < 0.05$ ), protein level ( $p < 0.01$ ) and sex ( $p < 0.01$ ). The interactions between type of housing, protein levels and sex were not significant. Similar results about the sex effect were also noted by Touchburn *et al.* (1963).

Weight gain (Table 2) and feed efficiency (Table 3) were greater for floor reared birds than for caged birds. Similar results for feed efficiency was obtained by Carson *et al.* (1973).

TABLE 2. Effect of different rearing systems and protein levels on weight gain (gram) at different ages

Age wk.	Protein level	Cage		Floor		Average
		♂	♀	♂	♀	
12-16	High	928.3	772.5	1068.5	728.3	874.2
	Low	835.8	610.0	799.2	468.3	678.3
	Average	786.7		765.8		
16-20	High	975.0	552.5	947.5	544.2	754.8
	Low	825.0	435.8	1097.5	643.3	751.4
	Average	697.1		808.1		
20-24	High	1045.0	518.3	1025.0	595.0	795.8
	Low	742.5	533.3	899.2	550.0	681.2
	Average	709.8		767.3		
12-24	High	2948.3	1843.3	3040.0	1867.5	2424.8
	Low	2403.3	1579.2	2795.8	1661.7	2109.9
	Average	2193.5		2441.3		

Tables 2 & 3 show positive effect on weight gain and feed efficiency by increasing the level of protein. Weight gain and feed efficiency showed the same trend of body weight. The same results were obtained also by Jensen *et al.* (1965). Weight gain and feed efficiency were better in males than females (Tables 2 & 3).

Feed consumption results are presented in Table 4. Caged birds tended to eat less feed than those reared on floor pens. However, Tikk (1967) found that the feed intake was greater for caged birds than floor birds. The low averaged feed consumption in caged birds (in this study) in combination with their relative wild, type, disconcertment, nerviness, great movement may explain the lower body weight, weight gain, feed efficiency, which were found for the caged birds in this study.

Table 4 shows also that the low protein groups consumed more feed than those fed high protein diet. About sex effect, it appears from Table 4 that males consumed more feed than females.

TABLE 3. Effect of different rearing systems and protein levels on feed efficiency at different ages.

Age wk.	Protein level	Cage		Floor		Average
		♂	♀	♂	♀	
12-16	High	3.50	3.16	2.90	3.69	3.31
	Low	3.90	4.21	4.43	5.87	
	Average	3.69		4.22		
16-20	High	3.87	5.47	4.16	6.07	4.89
	Low	5.41	7.42	4.41	5.10	
	Average	5.54		4.94		
20-24	High	3.89	6.80	4.14	6.05	5.22
	Low	6.33	6.86	5.59	7.06	
	Average	5.97		5.7		
12-24	High	3.76	4.88	3.71	5.14	4.37
	Low	5.17	5.99	4.80	5.97	
	Average	4.95		4.90		

TABLE 4. Effect of different rearing systems and protein levels on feed consumption (kg) at different ages.

Age Wk.	Protein level	Cage		Floor		Average
		♂	♀	♂	♀	
12-16	High	3.25	2.44	3.09	2.69	2.87
	Low	3.26	2.57	3.54	2.75	3.03
	Average	2.88		3.02		
16-20	High	3.77	3.02	3.94	3.30	3.51
	Low	4.46	3.23	4.84	3.28	3.95
	Average	3.62		3.84		
20-24	High	4.06	3.52	4.24	3.60	3.86
	Low	4.70	3.66	5.03	3.88	4.32
	Average	3.99		4.19		
12-24	High	11.08	8.99	11.28	9.59	10.23
	Low	12.42	9.46	13.41	9.91	11.30
	Average	10.49		11.05		

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## تأثير نظام الرعاية ومستوى البروتين على نمو الرومي الأبيض العراقي

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استخدم في هذه الدراسة ٩٦ طائر رومي أبيض عراقي لدراسة تأثير نظم الرعاية ومستوى البروتين على وزن الجسم والزيادة الوزنية وكمية الغذاء المستهلك ومعامل الاستفادة من الغذاء وكانت النتائج كما يلي :

التربية على الأرض أعطت نتائج أفضل من حيث وزن الجسم والزيادة الوزنية كما أن الطيور المرباة على الأرض كان استهلاكها من الغذاء وكفاءتها الغذائية أعلى من الطيور المرباة في الأقفاص وظهرت بثرات صدرية في الطيور التي كانت في الأقفاص .

ووجد أيضا أن وزن الجسم يتأثر بمستوى البروتين في العلف فقد أظهرت الذكور والإناث المرباة على مستوى بروتين ١٨٪ من ١٢ - ١٦ أسبوع وعلى مستوى ١٦٪ بروتين من ١٦ - ٢٤ أسبوع وزنا عاليا للجسم .

كذلك وجد أن وزن الجسم والزيادة الوزنية وكمية العلف المستهلك ومعامل الاستفادة من الغذاء تتأثر بالجنس حيث كانت الذكور أعلى من الإناث في جميع هذه الصفات .