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Production and Behaviour of Broiler as Affected by Different Flock Sizes

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Abstract: Commercial poultry has been kept in different flock sizes, so that an experiment designed in which 150 broilers were purchased, weighed initially and randomly divided into two groups A (50) and B (100) and were housed at poultry Experiment Station, Department of Poultry Husbandry, Tando Jam for 6 weeks. Broiler (A and B groups) were offered feed (iso-caloric and iso-nitrogenous) *ad libitum* and water 24 hours. Brooding temperature, humidity and vaccinations were provided as per recommendations. The results revealed that average total feed intake was significantly higher for larger flock size group B than small group A (3.781 and 3.717 kg b^{-1}), respectively. Average live body weight of broiler increased significantly with the progress of period ($P<0.01$), while it was not different significantly for groups A (1.858 kg) and B (1.920 kg) per broiler, respectively. Mortality was higher for group B (4.0) than A (0.0) percent, respectively. Social behaviours show that aggression instigated and target was higher in A than B groups (4.2 vs 3.3 incidences 24 hr^{-1} b^{-1} $P<0.01$). Similar trends were noted for total aggression and social behaviour ($P<0.01$) respectively. Flying and playing behaviours in groups A and B were same ($P>0.05$). Feed Conversion Ratios in groups A and B were 2.242 and 2.202, while net profit earned was Rs. 10.113 and 12.075 per bird respectively. It was concluded that broiler housed in larger group sizes were resulted in better F. C. R and become more economical.

Key words: Broiler, flock size, feed intake, production, behaviour, mortality

Introduction

Poultry industry has still stands for egg and meat production objectives to be utilized as a food for people as a source of rich protein. Due to continuous demand of eggs and meat, poultry business still develops with all related/dependent business branches for its strengthening. Poultry farming is in the hand of most small size flock holders, followed by medium but less share in the hand of large flock holders. This flock sizes particuarly broilers kept on floor system needs more research attention. So, an experiment has been designed to evaluate its influence on productivity and behaviour.

Materials and Methods

A total of 150 day-old broiler were purchased and brooded on floor system by providing about 3 inches sun-dried wooden dust as a litter for 2 weeks at Poultry Experiement Station, Department of Poultry Husbandry, Tando Jam. Chicks were weighed at the beginning of third week and randomly divided into two groups viz; A (50) and B (100). Weekly live body weight of each broiler of each group was recorded. Broiler in both groups were kept in separate partitions/compartment and provided similar management. Starter/finisher feed and fresh underground water was provided *ad libitum* for 24 hours. Light was provided over 24 hours. Broilers were vaccinated according to the local schedule. Social behaviours such as aggression instigator, target, avoidance, flying and playing were visually mointored after every five minutes interval by the Time Sampling Technique (Ring, 1995). Randomly selected 10 broiler from each group were painted for identification. The data so collected were tabulated and analysed by using General Linear Model in Minitab a statistical Programme, U. S. A. (M. T. B., 1992).

Results and Discussion

Feed intake: Average total feed intake of broiler was significantly higher for larger flock size (B) than small flock size (A). Furthermore interaction between different group sizes and weeks period was also significantly different from each other ($P<0001$). The finding of Goldflus, *et al.* (1997) was well comparable with the present results, who reported that feed intake decreased significantly as the flock size increased. The production of broiler per m^2 was higher for increase in their housing density.

Table 1: Average total feed intake of broiler kept in different group sizes (kg b^{-1})

Groups		Prob.
A	B	
3.717	3.781	0.001

Note: Probability of weeks = 0.001 and weeks Groups = 0.001

Live body weight: Average final live body weight shows that broiler of group B observed slightly heavier

Table 2: Average final live body weight of broiler kept in different groups sizes (kg b^{-1})

Groups		Prob.
A	B	
1.858	1.920	0.328

Note: Probability of weeks = 0.001 and weeks * Groups = 0.889

Table 3: Total mortality of broiler kept in different group sizes (% group)

Groups		Prob.
A	B	
0.0	4.0	0.000

Note: Probability of weeks * Groups = 0.001

Table 4: Average Feed Conversion Ratio of broilers kept in differnet group sizes

Characters	Groups	
	A	B
Total feed intake (kg/b/42d)	4.071	4.135
Total weight gain (kg/b/42d)	1.816	1.878
FCR	2.242	2.202

Table 5: Social behaviours of broiler kept in different group sizes (incidence #/24 hrs/b)

Behaviours	Groups		Prob.
	A	B	
Aggression instigator & target	4.20	3.30	0.001
Total aggression	6.30	5.00	0.007
Total flying and playing	0.90	0.90	0.095
Total social behaviour	11.40	9.20	0.001

than A (1.920 and 1.858 kg b^{-1}, respectively $P>0.05$). Average live body weights for weeks was significantly higher from each week ($P<0.01$). This result has been almost supported by Goldflus, *et al.* (1997), who concluded that the production of live birds m^{-2} increased significantly with increasing housing density.

Mortality: Total mortality in both group sizes of broiler show that it was higher in large group size (B) than small one (4.0 vs 0.0 percent, respectively). Olliveira, *et al.* (2000) reported that as the rearing densities of boiler increased, the mortality had been increased.

Feed Conversion Ratio (FCR): Feed conversin ratios were 2.242 and 2.202 for A and B groups,l respectively. The result is partially in accordance with those of Lewis, *et al.* (1997), who reported that broiler stocked at 17.0 per m^2 had lower body weight, converted feed less efficiently than broiler stocked at 4.25 per m^2.

Economics: Total cost accumulated was Rs. 69.781 and 70.485 against the total income of Rs. 79.894 and 82.560 and net profit earned was Rs. 10.113 and 12.075 for groups A and B, respectively. It was higher in large group sizes as compared to small ones.

Social Behaviour: The aggressive instigation (AI) and target (AT), total aggression (AI + AT + AA) and total social behaviours incidences were comparatively observed higher in smaller size flock (A) than larger one (B) but both flying and playingbehaviour was not different for both groups ($P>0.05$). Millman and Duncan (2000) noted extremely high degree of agression in broiler breeders; and Pettit, *et al.* (2002) reported threats and other types of aggressive interactions significantly lower in the moderately crowded treatment groups compared to the least crowded treatment. Popova, *et al.* (2002) studied behaviours of 3200 broilers i.e. avoidance to aggressiveness and considered this aspect as a reliable indices for the management of the social stress in broiler, while McGary, *et al.* (2003) indicated that frequency of total forced mating behaviour and aggression declined with age of the broilers.

Conclusion

It was concluded that broiler of small group sizes involved more in total aggression and social behaviour so then consumed larger quantitites of feed to become more expensive. Larger group size broilers were better efficient converter of feed into meat (FCR) although died more and became profitable.

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