

EVALUATION OF BROILER PERFORMANCE BY USING DIFFERENT ENERGY SOURCES

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ABSTRACT

The 400 straight run, day old Vencobb broilers chicks were randomly divided into four treatment groups of 100 birds each viz., control, T₁, T₂ and T₃. Each group was further divided into two replications of 50 birds each. Four iso-caloric and iso-proteinous experimental rations were formulated by replacing maize with jowar, bajra and broken rice at 25 %. The control group having diet with 100 % maize. The soyabean meal was the sole protein source for all the four rations (control, T₁, T₂ and T₃). The observations of the parameters were taken on weekly basis and were analysed by using Completely Randomized Design (CRD) and simple arithmetic calculations. The use of different energy sources i.e. jowar, bajra and broken rice can be very well replaced with maize in broiler ration without affecting the performance of the broiler.

Key words : Energy sources, feed consumption, weight gain, FCR, broilers.

The increasing demand of cereals for human and livestock consumption and their scathing price is putting great hindrance to the growth of Indian poultry industry. To meet this projected demand the need for cheaper feed ingredients and increase profitability is of utmost importance. Feed is the single largest item of expense in poultry production, the feed expenses accounts for nearly 65-70 % of total cost of production. Therefore, the growth of poultry industry is directly proportional to the demand of feed¹. Further, the growth of poultry industry in India is expected to limit supply of quality feed at remunerative price in order to sustain profitability in commercial poultry enterprise. The major objective of poultry production is to effectively and economically convert relatively unpalatable, unattractive and

locally available cheap feed stuff into palatable, attractive and nutritious product for mankind. Maize is being the major constraint in cost of feeding of broilers. Substitution of maize as energy source by other less conventional sources should be such that the nutritional status of feed is not deteriorated. The less conventional energy sources which are nutritionally similar to maize, that can increase the production are bajra, jowar and broken rice which are available locally and abundantly at cheaper rates. Hence, the present study was designed to evaluate broilers performance by substituting maize with jowar, bajra and broken rice.

MATERIALS AND METHODS

The experiment was carried out for 42 days (6 weeks) on 400 day old broiler chicks of Vencobb strain purchased from Vaishnavi Hatchery Private Ltd, Warvati, Ambejogai, Dist.

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Evaluation of broiler performance

Beed (MS), maintained at poultry unit in the Department of Livestock Production and Management. The chicks were weighed and randomly distributed in four groups as control, T₁, T₂ and T₃ with two replications with 50 chicks in each replication. The birds were housed under deep litter system with saw dust as litter material, the standard managerial practices were followed for all the groups. The brooding was carried out using electric hover.

Control group was prepared by using 100 per cent maize + soybean meal as a protein source + all essential feed ingredients. T₁ treatment having 75 per cent maize + 25 per cent jowar + soybean meal as a protein sources + all essential feed ingredients; T₂ treatment having 75 per cent maize + 25 per cent bajra + soybean meal as a protein source + all essential feed ingredients; T₃ having 75 per cent maize + 25 per cent broken rice + soybean meal as a protein source + all essential feed ingredients. The body weight, feed consumption and mortality were recorded for various groups. The differences among treatments within experiment were determined by using Equal Completely Randomized Design². Treatment mean were compared by critical differences by using statistical method and analysis of variance. The simple statistical methods were used for calculating cost of production and economics of broiler production.

RESULTS AND DISCUSSION

The analysis of variance (Table 1) for weekly feed consumption showed significant differences between the treatments at 42nd day of age. Whereas, non-significant differences were observed between control and treatment groups at 7th, 14th, 21st, 28th and 35th days of age. These findings are in agreement with the findings noted on replacement of maize with combination of jowar & bajra³, 25% replacement of Bajra⁴, replacement of maize with broken rice⁵, replacement of maize with energy sources⁶ and replacing maize with sorghum⁷. The non significant differences in cumulative feed consumption at various age groups may indicative of the fact that maize can be very well replaced by jowar, bajra and broken rice up to 25% without affecting the consumption and there by the

performance of the broilers.

The least square analysis of variance (Table 1) for weekly body weight gain showed highly significant differences ($P < 0.01$) at 14th, 21st, 28th and 42nd days of age whereas significant differences ($P < 0.05$) at 7th and 35th day between the treatments were observed. These findings are in agreement with the findings of replacement of jowar, bajra & ungrounded ragi⁸. However, the non significant differences were reported for weekly weight gain of broilers between the treatment groups of replacement of maize by various locally available energy sources^{3,4,5,6}.

The analysis of variance for weekly feed conversion ratio (Table 1) was highly significant ($P < 0.01$) at 14th day and significant differences ($P < 0.05$) at 7th and 35th days of age between the treatments and showed non significant differences at 21st, 28th and 42nd days of age. The findings of present study are in agreement with the findings on replacement of maize with different locally available ingredients^{3,4,5} and utilization of maize, pearl millet, finger millet & sorghum⁹. The weekly feed conversion ratio has given totally erratic behaviour and the reason may be attributed to disease and fluctuations in the environmental temperature during the experiment. It may also be concluded that the replacement of maize at 25 % by jowar, bajra and broken rice may have negligible effect and has resulted into non-significant differences during the finisher period for feed conversion ratio.

The analysis of variance has revealed non-significant differences for the mortality pattern in the control and treatment groups. The mortality observed upto 42 days of age for control, T₁, T₂ and T₃ were 2, 2, 3 and 1 percent.

The most economic group was T₂ followed by T₁, T₃ and control. Based on the economics of broiler production, it may be inferred that replacement of maize by 25% jowar, bajra and broken rice had significant effect over the economic returns of the different treatment groups. T₂ treatment was most effective combination for obtaining the birds with high returns. These results are in agreement with the findings noted with replacement of maize by jowar & bajra energy sources³.

Table 1. Analysis of Variance for weekly feed consumption, weekly feed conversion ratio and weekly weight gain/ bird of broilers at different age groups

Analysis of Variance for weekly feed consumption of broilers at different age groups													
Source	Df	7 th		14 th		21 st		28 th		35 th		42 nd	
		MSS	'F' value	MSS	'F' value	MSS	'F' value	MSS	'F' value	MSS	'F' value	MSS	'F' value
Treatment	3	33.33	2.66	469.79	6.53	500.12	1.09	2467.9	2.46	2170.9	2.15	2798.5	7.51*
Error	4	12.50		71.87		457.88		1001.0		1009.2		372.6	
Analysis of Variance for Weekly feed conversion ratio of broilers at different age groups													
Treatment	3	0.0235	12.56*	0.209	34.51**	0.0178	2.932	0.050	2.16	0.119	7.43*	0.00801	6.34
Error	4	0.0018		0.0060		0.0060		0.0231		0.0160		0.0012	
Analysis of Variance for Weekly weight gain of broilers at different age groups													
Treatment	3	74.04	13.63*	359.68	16.86**	1474.6	186.09**	774.2	158.40**	10016.0	7.85*	764.69	114.08**
Error	4	5.43		21.33		7.92		4.88		1274.5		6.70	

** P < 0.01

* P < 0.05

CONCLUSION

From the present study it may be concluded that whenever the prices of maize goes up or prices of jowar, bajra and broken rice are low, one can

think of formulating cost effective ration and can certainly increase the net profitability by keeping cost of feed at low level. However, while selecting these ingredients there quality should consider.

REFERENCES

- Ravi, R. (2000). Selection and processing of poultry feed. Summer School on recent concepts in improving feed quality and the techniques use in the evaluation of feed stuff for poultry, compendium, Namakkal (From 23-6-2000 to 13-7-2000), pp 23-34.
- Panse, G.V. and Sukhatme, P.V. (1967). Statistical Methods for Agricultural Workers, ICAR Publication, New Delhi.
- Nutan Subba and Siddiqui, M.F. (2002). Effect of replacement of maize by jowar and bajra with supplementation of multi-enzyme on the performance of broilers. M.V.Sc. Thesis, MAFSU, Nagpur.
- Rathod, B.R. and Dhumal, M.V. (2002). Effect of replacement of maize by bajra with supplementation of multi-enzyme on the performance of broilers. M.V.Sc. Thesis, MAFSU, Nagpur.
- Edwin, S.C., Vishwanathan, K., Kumararaj, R. and Rangareddy, P. (2002). Effect of replacing maize with broken rice on growth performance of broilers. *Indian Journal of Poultry Science*, **37**(2):187-189.
- Clement Ijaduwa Medugu, Ibbrahim Dansaka Kwari, Joseph Igwebuikwe, Iro Nkama, Ibrahim Dukku Mohammed and Bruce Hamaker (2010). Agriculture and Biology Journal of North America, 1 (3) : 321
- Ravinder Singh, Berwal, R.S. and Sihang, Z.S. (2011). Effect of replacing maize with sorghum on the performance and utilization of nutrients in broilers. *Haryana Vet.*, 50 (Dec.2011), pp 85-88
- Raju, M.V.L.N., Shyamsunder, G., Sadagopan, V.R., Elangovan A.V., Reddy, M.R. and Rama Rao, S.V. (2004). Replacement of maize with jowar, bajra or ragi in broiler chicken diets. *Anim. Nutrition Feed Technology*, **4**:53-61.
- Rama Rao, S.V., Raju, M.V.L.N., Sailaja, M.S.B. and Sharma, R.P. (2004). Replacement of maize with pearl millet on weight nutrient basis in broiler chicken diet. *XI Animal Nutrition Conference*, (5-7th Jan., 2004), Jabalpur, pp 199-200.

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