

Starter broiler feed brand preferences by small scale poultry farmers versus performance of broiler chickens fed the preferred feed brands in Owerri zone, Imo State, Nigeria

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Abstract

The production and sale of 28 day-old broiler chicks, a business known locally as “brood and sell” is rapidly growing among small scale poultry farmers in Owerri zone, Imo state, South East Nigeria. Feed however, is a major budget item that affects profit in the business. This study therefore, evaluated the preferences of farmers for the different starter broiler feed brands versus the performance of such broilers on these feed brands. A purposively structured questionnaire was designed and administered to forty eight small scale poultry farmers in seven local government areas in the zone. Based on the responses from the farmers, a 28-day feeding trial was carried out at our station using 210, one-day old Marshal broiler chicks to determine their performance on feed brands preferred by the farmers. Results of the survey indicated that five feed brands coded TF, VF, AF, HF and ZF were actively distributed in the zone. VF brand was the most preferred (49.10%) and TF second most preferred (29.07%) while HF brand was the least preferred (3.66%). Results of the feeding trial indicated that TF recorded the best body weight gain (495.22g), feed conversion ratio (FCR), 2.53 and 0.00% mortality while HF recorded the least body weight gain (214.29g), poorest FCR (5.57) and highest mortality rate (14.28%). The VF brand mostly preferred by the farmers from our survey recorded 469.04g body weight gain, 2.87 FCR and 0.00% mortality. TF which outperformed other brands however, cost much more per kg. Preference of feed brand by small scale poultry farmers in Owerri zone, from the results obtained is influenced by cost but the quality of such feed brand was also a major consideration.

Keywords: Small scale, poultry farmers, feed brand, starter broilers, Owerri

Introduction

The small scale poultry production enterprise is a veritable livelihood source in developing countries. It has been established as one of the surest ways of lifting many resource poor persons, particularly women out of poverty in developing countries of the world. (Sonaiya, 2000; Etuk, 2013; Gates, 2016). Specifically, poultry production is considered in terms of its substantial contributions to farmer's household economy. This contribution could be measured in terms of direct income benefits which play vital role as a source of readily available cash to rural and peri urban poultry farmers (Etuk, *et al.*, 2013;

Oyebanji, 2014). In the tropics, chicken particularly, serve as affordable sources of meat and egg on account of their feed efficiency, short life cycle, fast growth and quick return on investment (Oluyemi and Roberts, 2007). In Nigeria, the poultry sector is extremely fragmented with most of the chicken raised in 'backyards' or on poultry farms with less than 1,000 birds. (Bolu, 2014; Sahel, 2015). Owerri zone, Imo state, appears to be the hop for poultry products distribution in southeast Nigeria (Okoli *et al.*, 2004). Similarly, the existence of the “brood and sell” system of broiler production which involves brooding and raising of day old broilers for sale after 28days gives more impetus to the

flourishing small scale poultry enterprise. The production system is aided by low input cost and quick return on investment. However, in both the large scale and small scale productions, similar challenges are experienced mainly the issues of quality and cost of feed (Sahel, 2015). Feeding interestingly is reported to constitute up to 70 - 80% of the recurrent cost of poultry production (Mtimuni, 1995; Agah and Norollahi, 2008; Amal *et al.*, 2015). It is therefore, important to use high quality feed that will increase the performance of the birds aimed at optimising feed efficiency and therefore, performance of the broiler chicken and profit on the farm (Gajana *et al.*, 2011). The most common feeding system in practice by Nigerian poultry farmers depends on the available commercial feed. Commercial feed mills currently produce two sets of feeds for broilers chickens; broiler starter (high protein, lower energy) and broiler finisher (high energy, lower protein) diets (Etuk *et al.*, 2018). Several feed brands are patronized by poultry farmers in the zone with varying degree of results possibly based on experience. Earlier studies indicated that there is the tendency for feed manufacturers, to produce substandard feeds, especially where they can evade sanctions from quality control agencies (Okoli *et al.*, 2007; Omede, 2008; Okoli *et al.*, 2008). Considering the high cost of feeding broiler chickens, there is the need to focus on efficient feed utilization, in order to maximize profits. Also, given the increasing number of people, especially those not skilled in feed formulation and production, venturing into poultry business, there is no doubt that there is a high demand for commercial feeds (Okpanachi *et al.*, 2018). This study therefore, sought to identify the preferences of farmers for the different starter broiler feed brands versus the performance of such broiler chicks on

these feed brands including the overriding reason(s) for the choice of the preferred brand(s).

Materials and method

Study area

Owerri zone of Imo state is located in the South east agro ecological zone in the rainforest belt of Nigeria. Imo state lies between Latitude 5° 4' and 6° 3' N and longitude 6°15' and 7° 34' E. The agro ecological characteristic of the area is as reported by Okoli (2003). Owerri zone comprises 9 local government areas namely, Owerri North, Owerri West, Owerri Municipal, Ikeduru, Mbaitoli, Aboh Mbaize, Ngor Okpala and Ahiazu Mbaize and Ezinihitte Mbaize.

Survey of feed brands and farmer's preferences

A preliminary survey of the study area was carried out to determine areas of intensive and widespread broiler chicken production and feed distribution outlets. The researchers also used the opportunity to familiarize themselves with the farms and farmers' groups in these areas. Resulting from this, all the local government areas except Ezinihitte Mbaize were selected for the survey to generate the primary data for this study between June and July. Pretested questionnaires and personal interviews were used to elicit information from poultry farmers in these purposively selected local government areas of Owerri zone.

Starter broiler feeding trial with preferred feed brands

Based on the result from the field survey, the five most popular feed brands were selected and evaluated in a feeding trial at the School of Agriculture and Agricultural Technology (SAAT) Teaching and Research Farm, Federal University of Technology, Owerri. One hundred and eight (108), one-day old broiler chicks were divided into five groups of 21 birds each and randomly assigned to

the five broiler starter feed brands coded VF, TF, AF, HF and ZF in a completely randomized design (CRD) experiment. Each group was subsequently divided into 3 replicates of seven birds each on weight equalization basis before the commencement of the trial. The replicates were each housed in a 1.5m x 1m concrete floored compartment covered with wood shavings in an open sided poultry house properly covered with polythene sheet during the brooding period. Water and feed were offered *ad libitum* and feed intake was measured daily by obtaining the difference between the quantity of feed offered and the left over the following morning. Body weight of the birds were measured weekly on replicate basis from where body weight gain were determined. Subsequently, feed conversion ratio, feed cost and feed cost per kg body weight gain were determined while mortality was also recorded. The feeding trial lasted 28 days.

Data analysis and presentation

Data obtained from the survey of feed

brands and farmer's preference were analysed using descriptive statistics with emphasis on frequency of occurrence and percentages. Means of data generated from the starter broiler feeding trials with the farmer's preferred feed brands were subjected to analysis of variance (ANOVA). Where significant differences were detected, the means were separated using the Least Significant Difference (LSD) (Little and Hills, 1978; Obi, 1990). The performance of the starter broilers on measured parameters were compared with the preferences of the farmers by ranking them from 1 – 5, with 1 representing the best and 5 representing the poorest.

Results and discussion

Characteristics of small scale poultry farmers in Owerri zone

The survey revealed that slightly more females (52.78%) than males (47.22%) and more married (80.56%) than single (19.44%) persons were involved in small scale poultry production in the study area (Table 1).

Table 1: Characteristics of small scale poultry farms and farmers in Owerri Zone, Imo State, Nigeria

Characteristics of farms/farmers		Percentage (%)
Gender	Male	47.22
	Female	52.78
Marital Status	Married	80.56
	Single	19.44
	Divorced/Separated	0.00
	Uneducated	0.00
Level of formal education	Primary school level	2.63
	Secondary school level	42.37
	Tertiary school level	50.00
	Formal training	61.11
Training in poultry production	Non formal (apprentice) training	33.33
	No training at all	5.56
Duration of poultry practice	0 – 5 years	22.33
	6 – 10 years	33.33
	11 and above	44.44
Type of poultry kept	Turkey	13.89
	Chicken (Broilers)	69.44
	Chicken (Laying birds)	16.67

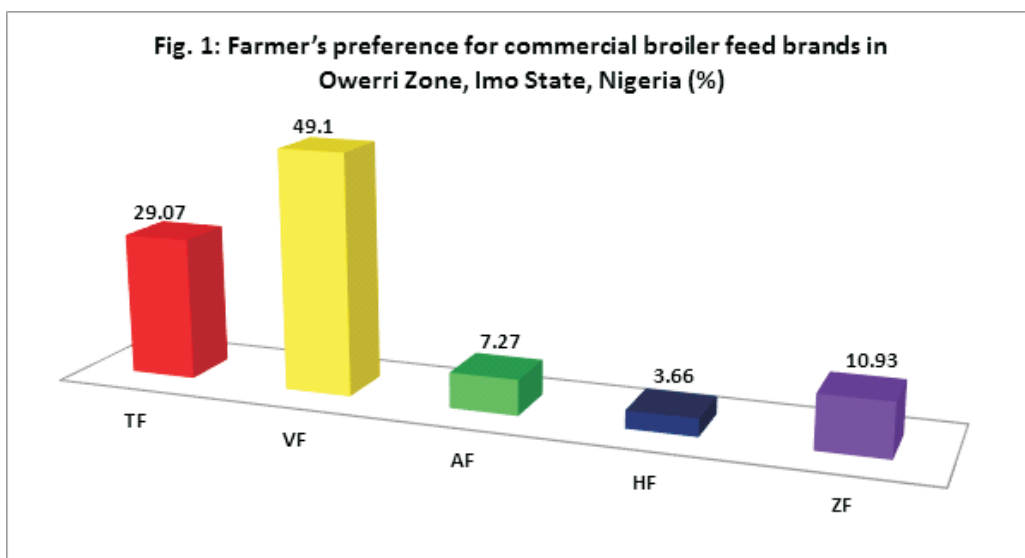
Starter broiler feed brand preferences by small scale poultry farmers

The slightly more females in the current study agreed with the 50.84% female poultry farmers in Akwa Ibom State reported by Bassey *et al.* (2018) This result might be as a result of the relatively low capital, short life cycle, fast growth and quick return on investment in poultry (Oluyemi and Roberts, 2007) which makes participation by females feasible and easy. Relatively low startup capital makes personal savings and credit from family and friends possible and enough for starting the business. This is in line with the report of Maidala *et al.* (2011) and Maidala *et al.* (2017). Similarly, Okoli *et al.* (2004) reported 73.64% married poultry business entrepreneurs in Imo State, Nigeria however; their report indicated significantly more males than females. The higher percentage of married persons involved in 'brood and sell' apparently indicates the potential of the business to satisfy family supplementary financial needs, particularly where more females than males are involved. Farmers with tertiary education (50.00%) and formal training in poultry production (61.11%) with more than 11 years experience (44.44%) were in the majority among small scale poultry farmers in the area. Farmers with Secondary

education constituted 42.37% which is close to the 45.75% reported by Bassey *et al.* (2018) and over 60% obtained formal training in poultry production. It would appear that more educated people ventured into poultry production than those without formal education and training possibly as a result of the somewhat high skill involved in raising exotic chicks (Kirui, 2014). Expectedly, 69.44% of the farmers surveyed kept broilers chickens and a good number of the farmers were involved in the "brood and sell" operations which according to Okoli *et al.* (2005) accounted for 15.2% of poultry enterprises in Imo State, south east Nigeria. Small scale poultry production provides an easy means of employment perhaps due to the low startup capital and quick return on investment (Okoli *et al.*, 2004; Oluyemi and Roberts, 2007; Etuk, 2013).

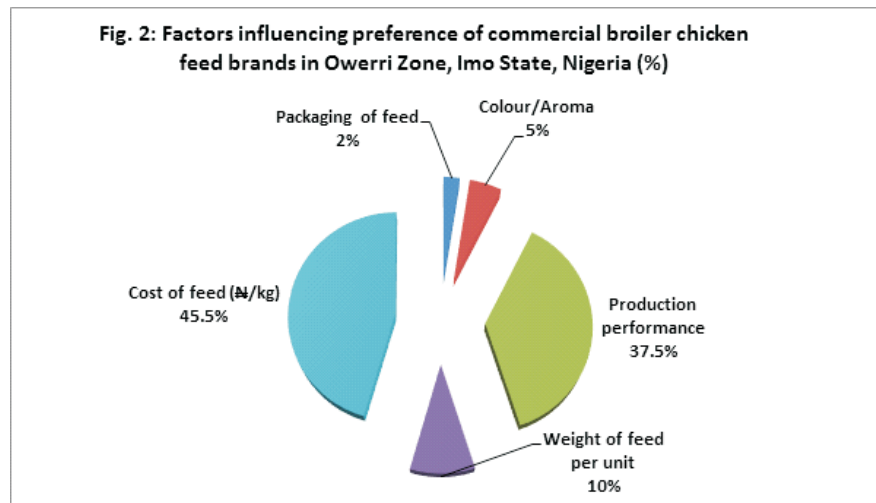
Starter broiler chicken feed brand preferences and factors influencing choice

Results of the survey also, indicated that five feed brands coded TF, VF, AF, HF and ZF were actively distributed in the zone. VF brand was the most preferred (49.10%) and TF second most preferred (29.07%) while HF brand was the least preferred (3.66%). (Fig.1).



Packaging of feed, feed colour/aroma, production performance, weight of feed per unit and cost of feed (N/25kg) were major factors influencing farmers' choice of broiler chicken feed brands. However, cost of feed (45.50%) and production performance (37.50%) were the major

determinants of farmers' choice of feed brand (Fig. 2). Production performance where the quality of chicks and management are adequate is influenced majorly by the quality of feed which Ogolla (2016) recommended further studies in determining factors that influence poultry production.



Farmers also listed a range of factors that they considered important in ranking a feed

brand quality and performance of broiler chickens (Table 2).

Table 2: Farmers' perception of starter broiler chicken performance and quality of commercial broiler chicken feed brands in Owerri Zone, Imo State, Nigeria.

Reason for choice	Percentage of farmers
Rapid growth of birds	50.0
Low cost of the feed	2.50
High nutrient content	17.5
Aroma of the feed	5.00
Weight of feed per unit	2.50
Consistency in performance of birds	12.50
Increased appetite of birds	7.50
Attractive package and presentation	2.50

Growth rate ranked highest (50.0%) while low cost of feed, weight of feed per unit and attractive packaging each recorded 2.50% as the least factors. It is possible that the level of education, training and experience observed in this study might have been responsible for the farmer's reasons for feed brand preference (Kirui, 2014). Yusuf *et al.*

(2016) reported that highly educated youths dominated the poultry production business in Kwara state, North central Nigeria which they described as a positive development.

Performance of starter broilers on the farmer's preferred broiler chicken feed brands

Results of the starter broiler chicken feeding

Starter broiler feed brand preferences by small scale poultry farmers

trial indicated that feed brand TF recorded the best body weight gain (495.22g), feed conversion ratio (FCR), 2.53 and 0.00% mortality while HF recorded the least body weight gain (214.29g), poorest FCR (5.57) and highest mortality rate (14.28%). The VF brand which was the most preferred by farmers from our survey result recorded

469.04g in body weight, 2.87 FCR and 0.00% mortality (Table 3 and 4). TF, however, which outperformed other feed brands in terms of body weight gain and feed conversion ratio, cost much more per kg. This perhaps explains why TF was second in preference to VF from the survey result (Fig. 1).

Table 3: Production performance of starter broilers fed the commercial broiler feed brands

Production parameters	Commercial broiler feed brands					SEM
	TF	VF	AF	ZF	HF	
Initial body weight (g)	35.71	35.71	35.71	35.71	35.71	0.00
Final body weight (g)	530.95 ^a	504.75 ^a	361.93 ^b	272.22 ^c	250.00 ^c	12.19
Body weight gain (g)	495.22 ^a	469.04 ^a	326.22 ^b	236.51 ^c	214.29 ^c	12.19
Average feed intake (g)	1249.81 ^a	1241.59 ^a	1179.93 ^{ac}	1077.57 ^c	1203.70 ^a	32.95
Feed conversion ratio	2.53 ^a	2.87 ^a	3.54 ^b	4.61 ^c	5.67 ^d	0.23
Feed cost per kg (₦)	100.00	94.00	96.00	96.00	94.00	
Feed cost per kg body weight gain (₦)	253.00 ^a	270.41 ^{ab}	335.52 ^b	442.24 ^c	534.55 ^d	22.63
Mortality (%)	0.00 ^a	0.00 ^a	0.00 ^a	4.76 ^b	14.28 ^c	0.98

^{abcd} Means within a row with dissimilar superscripts are significantly different (p < 0.01)

Also, cost of feed, was an important determinant of the feed brand to patronize particularly, where performance between two competing brands were comparable as in the case of TF and VF brands (Table 4). It appears that broiler chicken farmers in this area were more interested in reducing the amount of money spent in producing the birds (input cost) which was influenced largely by cost of feed. An explanation for this phenomenon could be that by the nature of the 'brood and sell' operation, birds are

not sold on weight basis and processing is not done at 28th day of age. It therefore, makes more practical economic sense for the farmer to reduce the feed cost and grow out his/her birds since they will be sold live to those who will further raise them to maturity. These findings agree with the report of Kirui (2014) who observed that high cost of feed closes out many would be investors in this field and curtails the income and benefits that would accrue to the practicing farmers.

Table 4: Ranking of Poultry Farmer's preferences versus performance of feed brands in Owerri Zone

Preference and performance parameters	Feed Brands : Rank and Performance values				
	VF	TF	ZF	AF	HF
Farmer's preference (%)	(1 st) 49.0	(2 nd) 29.07	(3 rd) 10.93	(4 th) 7.27	(5 th) 3.66
Daily Feed Intake (g)	(4 th) 44.34	(5 th) 44.64	(1 st) 38.48	(2 nd) 42.12	(3 rd) 42.99
Daily Body weight gain (g)	(2 nd) 16.71	(1 st) 17.69	(4 th) 8.45	(3 rd) 11.45	(5 th) 7.65
Feed Conversion ratio	(2 nd) 2.87	(1 st) 2.53	(4 th) 4.61	(3 rd) 3.54	(5 th) 5.67
Feed Cost/kg (₦/kg feed)	(1 st) 94.00	(3 rd) 100.00	(2 nd) 96.00	(2 nd) 96.00	(1 st) 94.00
Feed cost per kg body weight gain (₦/Kg body weight gain)	(2 nd) 270.41	(1 st) 253.00	(4 th) 442.24	(3 rd) 335.52	(5 th) 534.55

Key: 1st = Excellent; 2nd = Very good; 3rd = Good; 4th = Fair; 5th = Poor

Conclusion

The farmer's preference of starter feed brands sold in Owerri, Imo State Nigeria from this study indicated feed cost and production performance as the major factors that influence such choices. The performance of starter broiler chickens on the farmers preferred brand of feed confirmed the fact that apart from cost of feed, farmers were interested in performance of the birds. It is recommended that farmers involved in the 'brood and sell' enterprise should choose feed brands that would produce faster growth in view of the short cycle of the enterprise and the need to reduce cost of prolonged growing period which will ultimately reduce the profitability of the enterprise.

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