

Original Research Article

Economics of Crossbred and Desi Pigs Fed on Niger Seed Cake as a Protein Supplement (*Guizotia abyssinica*)

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ABSTRACT

Present work was conducted to study the economics of crossbred (Tamworth and Desi) and *desi* pigs fed on Niger seed cake. Twenty one pigs of each genetic groups were divided into 3 groups (7 in each) fed with iso-caloric and iso-nitrogenous diets. Group 1 (T_{1cb} and T_{1d}) was fed with a standard concentrate mixture (with GNC) whereas, 50% GNC of T_1 diet was replaced by NSC (*Guizotia abyssinica*) in T_{2cb} and T_{2d} and 100% in T_{3cb} and T_{3d} diet. After 98 days of experimental feeding, the final body weight gains in crossbred pigs were significantly highest in T_2 (41.42 ± 1.59) followed by T_3 (39.5 ± 1.48) and T_1 (35.92 ± 1.36) whereas, in *desi* pigs no significant difference were observed. The feed efficiency ratios recorded in the present studies are considered to be highly satisfactory and indicated that the efficiency of utilization of niger seed cake is equal to conventional cakes. The cost of feed per kg gain in body weight in crossbred and *desi* pigs was highest in group T_{1cb} and T_{1d} (47.93, 68.98) followed by group T_{2cb} and T_{2d} (42.74, 52.51) and lowest in group T_{3cb} and T_{3d} (40.81, 48.98). Thus, ration T_{3cb} and T_{3d} worked out to be cheapest, followed by ration used in T_{2cb} & T_{2d} than T_{1cb} & T_{1d} groups.

Keywords

Economics, Pig,
Niger seed cake

Introduction

Pig rearing is very popular among tribals of Jharkhand state because of high feed conversion efficiency, shorter generation interval, faster growth rate, high dressing percentage, ability to utilize unconventional feed stuff efficiently and availability of pork to consumer. However, the feed cost which incurs 75-80% of the total cost alone becomes the main constraint in intensive and profitable pig production. Thus, the feed cost is the single major factor which governs profit or loss. Therefore, by reducing feed cost and increasing better feed utilization the profit margin can be raised to a greater extent. The feed cost may be minimizing

only by inclusion of locally available feed ingredients in its diet. Oil seed cake, particularly groundnut cake (GNC) is used as one of the protein supplements in the diet of pigs. But groundnut cake (GNC) is available in Jharkhand at higher price, because it is not widely grown here. Hence, it makes the pig ration costly. On the other hand, the Niger (*Guizotia abyssinica*) is widely grown here. It contains about 30% crude protein, 5.98% mineral matter and 14-18% crude fiber. It is richer in available lysine (400mg/100gm) and methionine content than groundnut cake. ME value varies between 2700-2800kcal/kg, hence,

can completely replace GNC on protein equivalent basis for growing chicks (Banerjee, 1998). The only constraint for pig feeding is its high CF content. However, Niger Seed Cake can be included in the ration of pig as a protein supplement (Roychoudhary and Mandal, 1984 and Kumar *et al.*, 2010).

Materials and Methods

The study was carried out on growing pigs of desi (21) and crossbred (Tamworth and desi) (21) pigs of about 2 to 2.5 months of age, maintained at Pig Breeding Farm, College of Veterinary Science & Animal Husbandry, Birsa Agricultural University. The piglets were randomly divided into 3 groups (T_{1cb}, T_{2cb}, and T_{3cb}) having 7 in each for crossbred and 3 groups (T_{1d}, T_{2d}, and T_{3d}) having seven in each for desi pigs.

Three types of concentrate mixture were prepared. Pigs of all the three groups (crossbred as well as desi) were fed iso-caloric and iso-proteinous diets as per the recommendation (NRC 1988). Piglets of group T_{1cb} and T_{1d} (control) were fed standard concentrate mixture consisting of maize, ground nut cake (GNC), wheat bran and fish meal in various proportions so as to satisfy nutrients requirement for pigs (Uttam *et al.*, 2010 and Peiretti *et al.*, 2015). For group T_{2cb} & T_{2d} and T_{3cb} & T_{3d}, the GNC of ration T_{1cb} and T_{1d} was replaced with Niger seed cake @ 50 and 100 percent on protein equivalent basis, respectively.

The weighed quantity of concentrate mixture was offered and the left over feed residue was also weighed next morning before offering feed and water for the next day. Feeding trial was carried for 98 days. The economics of feeding were calculated by taking cost of feed per kg of live weight gain. Feed cost was calculated by taking

prevalent market prices of different ingredients of ration.

Results and Discussion

The economics of feeding has been calculated taking into account the feed cost on the basis of prevailing market price of various feed ingredients (Table 1). Perusal of the table 1 revealed that cost of feed per 100 kg was highest for T_{1cb} and T_{1d} group (Rs. 1223.10) followed by T_{2cb} and T_{2d} (Rs. 1168.75) and T_{3cb} and T_{3d} (Rs. 1114.40).

The cost of feed per kg gain in body weight was calculated to be Rs. 47.93, 42.74 and 40.81 for group T_{1cb}, T_{2cb} and T_{3cb}, respectively. However, in *desi* pigs it was Rs. 68.98, 52.51 and 48.98 respectively for group T_{1d}, T_{2d} and T_{3d} (Table 2). Thus, ration T_{3cb} & T_{3d} worked out to be cheapest, followed by ration T_{2cb} & T_{2d} than T_{1cb} & T_{1d}.

Similar trend was noted in cost of production by scientists (Chabra *et al.*, 1972, Ranjhan *et al.*, 1971 and Reddy *et al.*, 1986) they studied on LWY or other exotic pigs.

The results, therefore, indicated that Niger seed cake could be satisfactory used to replace groundnut cake on protein equivalent basis, for promoting better growth of pigs and efficiency of food conversion.

Result also indicated that rearing crossbred pigs is more economical than desi pigs under similar management conditions.

The present studies indicate that Niger seed cake, which is extensively produced in Jharkhand and is cheaper than groundnut cake could be satisfactorily used to replace groundnut cake to make the ration economical.

Table.1 Cost and composition of different experimental ration

Ingredients	Cost/100Kg (Rs.)	Experimental ration (%)			Feed cost (Rs.)		
		T1	T2	T3	T1	T2	T3
Crushed Maize	930	61	56	51	567.30	520.80	474.30
G.N.C.	1655	14	7	-	231.70	115.85	-
Niger seed cake	900	-	12	24	-	108	216
Fish meal	2800	7.5	7.5	7.5	210.00	210.00	210.00
Wheat bran	835	16	16	16	133.60	133.60	133.60
Mineral Mixture	7900	1	1	1	79	79	79
Common salt	300	0.5	0.5	0.5	1.5	1.5	1.5
Total		100	100	100			
Total cost Rs/100 Kg	-				1223.10	1168.75	1114.4
Cost on D.M. basis	-				1358.98	1303.15	1248.12

Table.2 Economics and feed efficiency of crossbred and desi growing pigs maintained on different experimental rations

Particulars	T _{1cb}	T _{2cb}	T _{3cb}	C.D. Value
Total feed consumed/pig (kg)	128.13	133.43	127.99	-
Total cost of feed (kg)	1740.00	1738.59	1597.31	-
Total gain in body weight (kg)	35.92 ± 1.36 ^a	41.42 ± 1.59 ^b	39.50 ± 1.48 ^{ab}	4.39
Feed: gain ratio (kg)	3.53 ± 0.13	3.28 ± 0.21	3.27 ± 0.12	NS
Average cost/ kg gain in body weight (Rs.)	47.93	42.74	40.81	-
	T _{1d}	T _{2d}	T _{3d}	C.D. Value
Total feed consumed/pig (kg)	43.36	48.53	46.89	-
Total cost of feed (kg)	588.93	632.43	585.28	-
Total gain in body weight (kg)	9.06 ± 1.41	12.76 ± 1.61	12.51 ± 0.72	NS
Average cost/ kg gain in body weight (Rs.)	68.98	52.51	48.98	-

Note: Mean values under the same superscripts in a row did not differ significantly.

*P<0.05

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