

Analysis of Swine Production at Kent Academy, Plateau State, Nigeria

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Target Audience - Swine Farmers, Animal Scientists and Livestock Economists

Abstract

The economics of swine production at Kent Academy farm was studied using a 3-years record (1993-1995). During the period 20 litters of swine farrowed and reared in batches to point of slaughter. The mean litter size, weaning age (days), feed consumed per animal from weaning to point of slaughter (kg), carcass weight (kg) and mortality rates (%) were 9.15 ± 3.6 , 47.35 ± 7.8 , 284.60 ± 11.9 , 62.08 ± 10.8 and 11.8 respectively. There were significant ($p < 0.05$) seasonal differences in litter size, with sows farrowing in the early rainy season having the highest litters. Those farrowing in the early dry season had the least 11.8 and 7.4 piglets/litter respectively. Piglets mortality showed seasonal and yearly differences ($p < 0.01$). The highest mortality were in the early rainy season (7.3%) and in 1994 (7.9%) while there was no mortality in the early dry season and in year 1993 (0.6%). Other parameters showed no seasonal or yearly differences. The sum of ₦607,691.95K was expended during the 3 year period and a profit of ₦586062.75k was realized. The percentage cost of inputs showed that feed had the highest 67.8%. The result of this study indicated that swine management at Kent Academy farm was productive and profitable with over 90% profit.

Key words: Swine, Production, Economic Analysis, Profitability.

Description of the Problem

Pigs have been described as one of the most prolific and fast growing livestock that can convert food waste to valuable products (1). Their annual growth rate (3.8%) is higher than that of the human population (2.3-2.8%) (2). Their production has therefore been advocated as a short term measure toward alleviating the animal protein and calorie deficit especially in areas where there are no religious edicts preventing their production and consumption.

Nigeria is estimated to have 4.4 million pigs (2,3). About 78% of this population are found in the sub humid zones of Northern and Southern Guinea Savannah (3). Most of the pigs reared in these areas are local breeds managed under extensive system. Their productivity have been reported to be low (4). Efforts have been directed towards improving their productivity through

adequate nutrition (5,6), improved health and management (7) and breed development specifically through cross breeding with superior exotic breeds and to a lesser extent they are kept as pure breeds especially in institutional farms (8). There is scarce information on the productivity and profitability of swine under improved management in Nigeria and in Plateau state in particular.

The milder climate in the highlands of Jos Plateau has led to the general believe that the area is suitable for production of exotic animals like pigs and dairy cattle that might not survive and produce well in other parts of Nigeria due to harsh weather conditions. This study is aimed at evaluating the productivity and profitability of pure Landrace pigs kept under intensive management in Kent Academy Miango, a tropical highland in Plateau state, Nigeria.

Materials and Methods

Location and Climate

Kent academy is located in Miango village about 38km from Jos on latitude 9°45'N and 10°N and on longitude 8°35'E and 9°45'E(9) Miango has an annual rainfall of about 1400mm per annum with a range of 1300-1500mm. The rain starts around March ending to April and extend to late September-early October. The highest precipitation are recorded in the month of August. The mean temperature of the area is 22.8°C with a range of 15.0-31.2°C. The coldest period is from November to January and the hottest period is from April to June. The relative humidity of the area is 50% (mean) with a ranged of 14-70% (10).

Data Collection and Analysis

The data used for this study were production and financial data of the Kent Academy piggery over a period of three years (1993-1995). The records considered were farrowing dates, litter size, mortality, weaning age, feed consumed per batch from weaning to slaughter age, carcass weight and cost of feed, labour, medication, electricity water, transportation cost of piglets and overhead charges for the 20 litters of pure Landrace breed.

Production data were subjected to analysis of variance with season and year as sources of variation. The data on mortality was subjected to chi square (χ^2) (11).

Results and Discussion

The results on productivity analysis, net farm income and percentage cost of inputs are shown on table 1, 2, and 3 respectively.

Productivity Indices

The mean productivity of swine at Kent academy from 1993-1995 are shown on table 1. From the table, there were variations in litter size, weaning age, feed consumed per animal, carcass weight and mortality rate as they were affected by season and year. There were a total of 20 litters recorded over the 3 year period, a total of 177 piglets were fattened from weaning to point of slaughter at an age range of 175-346 days. A total of 21 piglets died during the period under study.

The mean litter size of sows in Kent Academy Farm was 9.15 ± 3.0. The litter size reported in this study are similar to those of Trevor and UMBERLEIGH

(13), who reported a mean litter size of 9.3 per sow in Cuba. The values are however lower than the targeted 11 piglets per litter (13) as a mark of good productivity. Litter size significantly varied with season ($P < 0.05$). More piglets were born per dam during the early rainy season (April-June) than those born in the late dry and early dry season. This might be attributed to the fact that piglets born in the early rains were conceived during the cold dry season. Arganosa et al., (14), Steinbach (15), and Adebambo (16) reported that sows/gilts inseminated / mated during the coldest months of the year produce larger litter size than sow/ gilts mated during the hottest months of the year as similarly reported in this study. What is not clear is as to whether the fewer litter size were due to poor fertilization or due to early embryonic mortality as a result of the heat stress. There was no significant difference in litter size with respect to year. This might be attributed to uniform or good management over the years studied.

The weaning age for the 20 different litters was 47.34 ± 35 days. Season and year did not influence Kent Academy's farm management decision to wean their piglets thus it might imply that the piglets studied attained their desired weaning age and weight at all seasons due to good management. Lack of defined weaning age might affect optimum productivity of breeding herd.

From table 1 the mean feed consumption per animal was 248.60 ± 117.87kg. The result of the study shows that there was no seasonal or yearly variations in feed consumption per animal. The very wide variations within season and year might indicate the variability in feeding period from weaning to slaughter which ranged from 175 to 346 days.

The overall mean carcass weight of the 155 pigs slaughtered from 1993-1995 was 62.08 ± 10.79kg. The mean carcass weight reported is higher than the Nigerians average (44kg/pi) as reported by FAO (17). The differences might be due to breed differences as the FAO's average might be based on local breeds of pigs. The non significant differences between seasons and years with regards to this trait is a welcome idea for all year round pig fattening in this area.

A total of 21 piglets died during the period under study. There was significant ($p < 0.01$) seasonal and yearly differences in piglet mortality. The highest mortality was recorded during the early

Table 1: The effect of season and year on the productivity of swine at Kent Academy, Mtango

	Litter Size		Weaning age(days)		Feed consumed/ Animal(kg)		Carcass weight/ animal(kg)		Mortality	
	n	X ± SD	n	X ± SD	n	X ± SD	n	X ± SD	N	X(%)
Overall (μ)	20	9.15 ± 3.00	20	47.35 ± 7.81	177	284.60 ± 117.87	138	62.08 ± 10.79	177	22(11.86)
Season		*		NS		NS		NS		χ²df3 = 13.24**
Late dry (Jan-March)	6	3.00 ± 2.16	6	49.67 ± 5.63	46	307.68 ± 48.62	32	61.39 ± 6.03	46	2(4.35)
Early rain (April-June)	5	11.89 ± 1.36	8	42.75 ± 6.92	55	289.34 ± 135.20	39	64.19 ± 8.87	55	13(23.64)
Late rain (July-Sept)	4	10.00 ± 2.74	2	46.50 ± 1.50	40	199.05 ± 87.61	31	56.56 ± 15.64	40	6(15.15)
Early dry (Oct-Dec)	5	7.49 ± 3.61	4	53.50 ± 8.17	36	342.65 ± 132.37	33	65.45 ± 8.54	30	0(0.0)
Year		NS		NS		NS		NS		χ²df2 = 22.44**
1993	8	9.10 ± 3.14	5	44.00 ± 2.45	72	285.5 ± 5115.55	57	59.4 ± 111.51	72	1(1.39)
1994	4	10.80 ± 2.49	7	47.10 ± 8.34	43	189.3 ± 188.41	27	56.5 ± 33.23	43	14(32.56)
1995	8	8.40 ± 2.96	8	49.40 ± 8.82	62	349.5 ± 890.63	51	68.0 ± 19.77	62	6(9.68)

Source: Field survey.

KEY NS = Non significant

* = Significant at (P<0.01)

** = Significant at (P<0.5)

χ² = Chi square

df = degrees of freedom

Table 2: Net farm income of swine production in Kent Academy, Miango

	Total mean Yield(kg)	Total Revenue(₦)	TVC ₦	TFC ₦	TV ₦	NFI ₦	Cost/kg ₦
TOTAL	7795.53	1193754.70	543920.10	63761.90	607691.95	586062.75	77.95
MEAN	443.09	66319.70	90212.80	3542.33	33760.07	32559.04	

Source: Field Survey

KEY: NFI = TC-(TVC+TFC)

NFI = Net Farm Income

TR = Total Revenue

TVC = Total Variable Cost

TFC = Total Fixed Cost

Table 3: Cost (and percentages) of inputs used in swine production at Kent Academy, Miango

Inputs	Cost(₦)	(%)
Feed	411865.52	67.8
Medication	6493.25	(1.1)
Labour	29898.78	(4.1)
Electricity	1222.05	(0.2)
Piglets	99450.00	16.2
Fixed assets	63761.90	10.5
Total	607691.95	(100)

Source: Field Survey.

rainy season 23.649 and no mortality was recorded in the early dry season (October-December). The highest mortality between the years was in 1994 (32.56%) and the least (1.39%). The overall mortality reported in the study are lower than the reports of Fetuga et al, (18) and Payne (19) who reported mortality of 21 and 30 % respectively. The variation might be due to differences in location and systems of management.

Net Farm Income Analysis

The result of net farm income analysis are shown on table 2. From the table, a total of N607,671.95k was expended during the three year period of production. Out of this total cost, N543,920.10k and N63,761.90 were fixed cost and variable cost respectively. The net farm income showed a profit of N586,062.75k representing about 96.4%. The high profit may be due to the fact that the farm sells its products dressed to the expatriates around Jos, dressed meat which have added value of processing.

The cost analysis showed that the cost of feeds (N411,865.52) constituted the highest percentage (67.8%), (Table 3), which was followed by cost of piglets (16.4%) and fixed assets (10.5%). Feeds had previously been identified as the highest cost of input in swine production (16). This implies that to increase the profit margin, alternative sources of feeds should be considered. The farm should consider the possibility of compounding their rations using locally available feed ingredients or by feeding other household waste to reduce the total cost of feed.

Conclusion

The management of pigs in Kent Academy farm could be said to be good. This is reflected by way of large mean litter size, heavy carcass weight and moderate mortality recorded. On the whole Kent Academy swine farm profited over the studied period.

Recommendations

It is recommended that the farm should maintain or improve on the management level. There is need to keep good breeding records so that precise productivity analysis can be carried out on all operations of the farm in other words from breeding to fattening. There is need for proper valuation of fixed assets and also weaning age should be defined.

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