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NEONATAL DEATH: A MAJOR CONSTRAINT TO SUCCESSFUL PIG PRODUCTION IN KADUNA STATE, NIGERIA.

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Abstract

Successful economical pig farming is determined by several factors that include the number of piglets weaned. This aspect of pig farming is highly influenced by neonatal deaths; which other workers put at between 10-15 %. An assessment of the effect of neonatal deaths on pig farming in Kaduna state was carried out between the period of July 2003 and August 2004, involving 81 piggeries located in four Local Govt. Areas of Kaduna State through routine visits, farm records and questionnaires.
The study involved 136 sows that farrowed 1,230 piglets within the period under study, 250 died before weaning age (average of 8 weeks) giving a mortality rate of 20.33 %. Infectious and non-infectious death accounted for 22.8 % and 68.0 % deaths respectively, with unknown causes of 9.2 %. Of the non-infectious, overlaying by sows accounted for 35.2 %, missing piglets was 12.3 %, death due to weakness accounted for 10.5 % while stillbirth and eaten by carnivores (dogs) had 8.8 % each. Piglets that were overrun by vehicles were 7.6 %, cannibalism was 4.1 %, iron deficiency and starvation gave 3.5 % each. Chilling, trampling, scorpion sting and electrocution gave a total of 5 %. The mortality rate of 20.33 % recorded in this study is higher than that reported by other workers (10-15 %) and this was attributed to the type of managerial practices.

Introduction

Protein is an essential component of diet and can be gotten from both animal and plant sources. Animals play an important role as sources of critically needed protein in most tropical countries. The animal protein intake in the sub-Saharan countries in general is far below the W.H.O. recommended value of 35mg/head/day, (Wilson *et al.*, 1980, Loosli *et al.*, 1999). Sources of animal protein in Nigeria include cattle, sheep, goat, poultry, pigs, fish, bush meat, rodents etc. (Blake *et al.*, 1972).

Pigs provide a good source of animal protein at a lower cost than ruminants, although social, religious and climatic factors have posed constraints to the pig industry as a source of animal protein, (Holness, 1991).

The pig is a fast growing and early maturing (6 months) livestock with short gestation period of about 4 months, minimum litter size of 8 piglets, and very good converter of food residues into meat. Pig farming has witnessed a tremendous increase of recent in Kaduna state, providing a major source of income as well as readily available animal protein to the consumers.

In Nigeria, however, there has been a steady increase in pig production in spite of these constraints especially in the Northern parts of the country, (Blake *et al.*, 1972, Bourn *et al* 2004).

Successful economical pig farming is determined by several factors that include the number of piglets weaned. This aspect of pig farming is highly influenced by neonatal deaths; which other workers put at between 10-15 %, (Amas, 1999).
Nigerian livestock population has improved over the past years with cattle numbering 13 million, sheep, 22.1 million, goats 34.5 million, pigs 3.5 million, poultry 82.4 million, and camels 0.9 million. It is anticipated that the number of pigs would double in the next few years; because various exotic breeds including Landrace, Large white, Hampshire and Duroc are gradually replacing the traditional Nigerian black hairy pig. Most of these animals are

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kept in doors all seasons, (Bourn *et al.*, 2004).

Production of pigs is profitable and this may be considered in the fight against protein deficiency that is one of the most common and critical aspects of the world's hunger crisis, (George, 1973).

However, there are constraints to the successful pig farming; these are diseases, malnutrition, parasitism and neonatal death, (Almond *et al.*, 2003). Neonatal death constitutes a severe handicap to any pig farmer; in most cases there is loss of about 10-15 % piglets from birth till they are weaned at 8 weeks, (Holness, 1991, Amas, 1999).

There is no reported information in Nigeria on the neonatal death in piglets in piggeries (not to authors' knowledge) especially in Kaduna State. This study was carried out to establish causes of neonatal deaths with particular reference to the piggeries in Kaduna State.

Materials and Methods

The study covered a period of 12 months (July, 2003- August, 2004) and 81 piggeries were identified and earmarked for the study in eight different local Government Areas, Kaduna State, four each in the North and the southern part of the state.

Piggeries belonging to both institutions and private individuals were sampled. In each farm the following information were sought; management practices, number of productive sows, number of farrowings per each animal, litter size per farrow, number of piglets that died before weaning and possible cause of death; age and weight at weaning. The farm records were also used to ascertain possible cause of deaths. Regular visits were made to the selected farms records were taken at all visits.

Result

A total of 81 piggeries were selected for this study comprising of one institutional and eighty private. Out of these farms, 136 sows were used for this study, the number consisted of Large white, 95, Duroc, 20, Landrace, 7 and Crosses breeds, 14.

The main management practices found on these farms are intensive (the institutional) and semi-intensive in the private farms.

The 136 sows farrowed 1,230 piglets within the period under study, 250 died before weaning age (average of 8 weeks) giving a mortality rate of 20.33 %. Infectious and Non-infectious causes of death accounted for 22.8% and 68.0 % respectively, with unknown causes making the remaining 9.2 %.

Overlaying by dams was the major cause of piglet death, accounting for 35.2 % of the total death of the non-infectious cause of death. Missing of piglets had 12.3 %; weakness, 10.5 %; stillbirth, 8.8 %; eaten by carnivores, 8.8 %; overrun by vehicle, 7.6 %; cannibalism, 4.1 %; iron deficiency and starvation had 3.5 % each; chilling, 2.9 %; trampling, 1.1 %; scorpion sting, 0.5 % and electrocution, 0.5 %, (Table 1; Fig 1).

In the intensive management systems 6 sows farrowed 73 piglets, 9 piglets died before weaning accounting for a mortality rate of 12.33% while that of semi-intensive,130 sows farrowed 1,157 piglets out of which 241 died before weaning giving a mortality rate of 20.83%.

Discussion

In this study 68.0 % of death was due to non-infectious causes and most of these deaths occurred within the few hours of life and the first two to three days with many of the later deaths due to other events, which agrees with (Portal, 2001).

Table 1.0 Causes of neonatal deaths in the eight piggeries.

Causes of death	Management system		Total number of deaths	% Deaths
	INT	Semi-INT		
Overlaying	5	55	60	24.0
Diarrhea	-	33	33	13.2
Missing	-	21	21	8.4
Weakness	1	17	18	7.2
Helminthosis	-	16	16	6.4
Still birth	-	15	15	6.0
Eaten by dog	-	15	15	6.0
Knocked by vehicle	-	13	13	5.2
Mange	-	7	7	2.8
Cannibalism	2	5	7	2.8
Iron deficiency anaemia	-	6	6	2.4
Starvation	-	6	6	2.4
Chilling	-	5	5	2.0
Trampling	1	1	2	0.8
Cough	-	1	1	0.4
Scorpion sting	-	1	1	0.4
Electric shock	-	1	1	0.4
Unknown	-	23	23	9.2
Total	9	241	250	100

From other non-infectious, crushing or over laying accounts for the highest percentage deaths in both the intensive and semi intensive management systems, this also agrees with the finding of Vaillancout and Tubbs, (1992) and Weary *et al.*, (1996). However, in this study, out the 60 deaths (35.2%) due to overlaying, 5 piglets are from institutional while 55 are from the semi-intensive managed farms.

Piglets missing accounted for 12.3 %, this is more with the semi-intensive farm where sows are allowed to move about in search of food and during that the course, some of the piglets missed either unable to trace others, their path, frighten by predators or carried away by some attractions as reported by Wyeth and McBride, (1964), and farmers usually could hardly give an account of what happened to the piglets. The authors' views are that these piglets that are said to be missing could be part of those eaten by dogs, or join other sows with litters close by after missing their way.

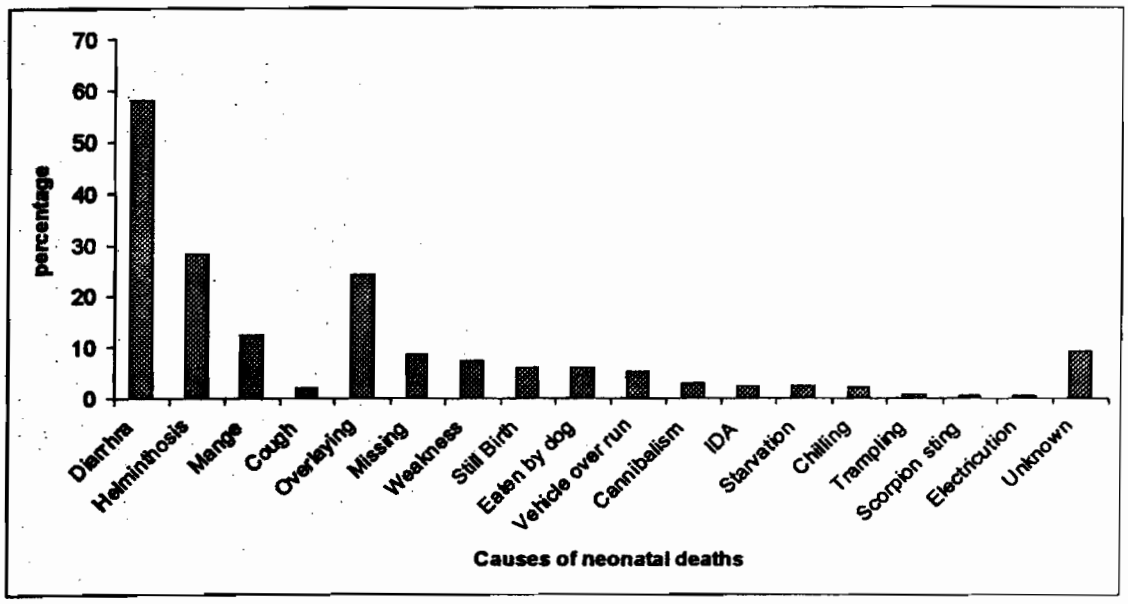

Figure 1. Causes of piglet neonatal death

Comparatively, weak piglets (10.5%) are assumed to be runts. In this study semi-intensive accounted for more of the weaklings (17) that is 94.4 % of the total number, which may be attributable to management problems on some of the farms, this could be adduced to infectious organisms and malnutrition also, (Overbo, 1986; Mensah, 1988, Rao, 1992, Potter, 1998). Adduced to infectious organisms and malnutrition also, (Overbo, 1986; Mensah, 1988, Rao, 1992, Potter, 1998).

A percentage of 7.6 % were attributed to death by vehicle, this is another cause of neonatal death in piglets. When sows are rearing they tend to cross roads and vehicles run down piglets because of their behavior, when frightened piglets run in all directions randomly thereby been run over by vehicles at that instance, (Wyeth and McBride, 1964).

Cannibalism (4.1%) contributes to piglet loss. This is usually practiced by sows especially the large type and it is said to be due to lack of sufficient or the need for protein at farrow. Most of the piglets eaten are the weaklings of those that come in sight of the sow when the stimulation is aroused. Hogs are also said to partake in the cannibalism, (Overbo, 1986, Potter, 1998).

Iron deficiency anaemia (IDA) and starvation accounted for 3.5 % each, the IDA occurred in the semi-intensive farm only. However, usually pigs produced semi-intensively on free soil do not come down with IDA. In this study however, the 6 piglets are from one source where the management system was poor and needs improvement especially on the type of feeds given to the pigs and. It was found out that the farmer had never had veterinary services; supplementation is never practiced in this private farm. It is also a well-known fact that other minerals (Zn, Cu, Mn, P and Ca) could tie down iron when in excess, (McDonald *et al.*, 1982). The piglets that are found to be anaemic are mostly the weaklings who are left behind during feeding. Also this farm feed the pigs with grass (Comalina); this may likely contains some of the minerals that tie iron making it unavailable for absorption.

Trampling, (1.1 %); scorpion sting and electrocution accounted for 0.5 % each.

These problems usually occur with piglets that roam and are curious, others during exercise (Mensah, 1988, Rao, 1992). Though the percentage is very low, it has become major causes for concern to pig farmers, where losses are on the increase. Unknown causes accounted for a total of 9.2 %, this is high, and the authors have the view that a combination of dog eating, death from vehicle, cannibalism, falling into ditch and theft could be responsible for the unknown causes. This may be true of the semi-intensive farming system where only when animals come back that counted. The missing ones are taken by faith that they are actually missing for whatever is the cause.

The infectious causes accounted for 22.8 % of the piglets' mortality and the major causes are diarrhea (57.9%), helminthosis (28.0 %), Mange infestation (12.3%) and cough is (1.8%).These conditions could be averted if only farmers seek veterinary services.

Conclusion

The neonatal death rate in this study was found to be high (20.33 %) compared to those reported. Therefore it is necessary that the farmers seek veterinary services as well as nutritional supplementation to avoid some of the neonatal deaths. Guardrails or creep feeding may be introduced to bring the number of deaths especially in the semi-intensive farms. But as pig production is on the increase in the country, more extension services are strengthened and given more encouragement.

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