

## Multiple Births and Reproductive Problems in West African Dwarf Ewes and Does in Southern Guinea Savannah Zone of Nigeria

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### Introduction

Animal management is one of the most important factors which limit sheep and goat production in Nigeria. It has been reported that the management systems of small ruminants are dictated by factors such as climate, cropping system and population density (Otchere and Kallah, 1985). Low reproductive performance of small ruminants in the north-eastern Nigeria is implicated to the traditional husbandry system practiced by most farmers in the area (Butswat *et al.*, 1998). Butswat and Bello (2002) observed that the system varies from free range grazing and browsing with little or no supplementary feeds during the cropping season. Similarly, Bayer (1986) reported that in the traditional husbandry system no special care is given to the breeding stock and hence their reproductive performance remains perpetually low.

The low reproductive efficiency of small ruminants in the tropics is influenced by factors such as breed (Butswat, 1994; Butswat *et al.*, 1998), nutrition (Malau-Aduli *et al.*, 2004), season (Butswat, 1994; Zahraddeen, 2006), Age (Akpa *et al.*, 1998), pests and diseases (Hafez, 1980; Butswat *et al.*, 2005). It has also been shown that traits such as litter size, birth weight and growth rate of off-spring from birth to weaning are indices of reproductive performance (Hill, 1988; Adama and Arowolo, 2002). Zahraddeen (2006) reported that apart from the genetic factor; diseases, seasonality of feed supply, poor management practices and low level of literacy among farmers are also responsible for the low performance of our indigenous animals. Assessment of the reproductive performance of small ruminants, especially sheep and goats with respect to the occurrence of multiple births and reproductive problems in these species managed under small-holder husbandry system is practically non-existent in literature in the study area. This study was therefore undertaken to investigate the factors responsible for the differential multiple-birth and reproductive problems in the two species in Gboko Area of Benue State, Nigeria.

### Materials and Methods

This study was carried out in Gboko Area of Benue State, Nigeria (October, 2004 – September, 2005). The area is situated in the southern guinea savannah ecological zone of Nigeria. The mean annual rainfall is about 1280-1367 mm, which influence greatly the amount of pasture and fodder in the area to suit small ruminant production (Kowal and Knabe, 1972). A total of 293 animals were used (120 sheep and 173 goats) for the on-farm study, which lasted for 12 months (October, 2004 to September, 2005). The season in Nigeria is divided into four based on the rainfall distribution pattern (Butswat, 1994). These are: - the early dry (October - December), late dry (January - March), early rainy (April - June) and late rainy (July - September) seasons.

The breeds of sheep and goats used for the study were the West African Dwarf types, which were the predominant breeds of these species in the study area. The detailed descriptions of these breeds have been reported by Adu *et al.* (1979). The animals used were from small-holder farms. The farmers practiced the traditional husbandry system and this ranges from free-range grazing and browsing to little or no supplementary feeding during the cropping period. The animals were sometimes given rudimentary health care, but in most cases not dewormed. Data were recorded on cases of multiple births (singles, twins, triplets and quadruplets) and on some incidence of reproductive problems (dystocia, retained placenta, mastitis, metritis and neonatal infections). Data were generated through on-farm visits,

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veterinary clinics and other relevant information were collated through oral interview. The data were classified based on location, species and season of the year. Data generated were subjected to simple descriptive statistics and chi-square test as described by Humburg (1977).

## Results

Data on the influence of species on multiple births are presented in Table 1. The results showed that the incidence of singles, twins, triplets and quadruplets were significantly ( $P < 0.05$ ) different between the two species; values being 51.9 vs 48.1, 62.0 vs 38.0, 72.5 vs 27.5 and 55.0 vs 45.0 % for does and ewes respectively.

Table 1: Influence of species on occurrence of multiple births in ewes and does

Litter size	Does	Ewes	Overall	X <sup>2</sup>	Los
Singles	95(51.9)	88 (48.1)	183		
Twins	88 (62.0)	54 (38.0)	142		
Triplets	37(72.5)	14 (27.5)	51	7.82	*
Quadruplets	11 (55.0)	9(45.0)	20		

\*  $P < 0.05$ , Figures in parenthesis are percentages, Los = Level of significance

Table 2: Influence of season on occurrence of multiple births in sheep and goats

Litter size	Early dry	Late dry	Early wet	Late wet	Overall	X <sup>2</sup>	Los
Singles	52(28.4)	38(20.8)	61(33.3)	32(17.5)	183		
Twins	31(21.8)	42(29.6)	40(28.2)	29(20.4)	142	16.92	NS
Triplets	18(35.3)	14(27.5)	9(17.6)	10(19.6)	51		
Quadruplets	8 (40.0)	4(20.0)	4(20.0)	4(20.0)	20		

NS = Not significant at 5 %, Figures in parenthesis are percentages, Los = Level of significance

Table 2 shows the influence of season on multiple births in these species. The results revealed non-significant difference in the birth of singles, twins, triplets and quadruplets with respect to season of the year. However, the incidences of some reproductive problems (dystocia, retained placenta, mastitis, metritis and neonatal disease) as influenced by the species are presented in Table 3. The results showed cumulative incidence of these problems differed significantly ( $P < 0.001$ ); with does having higher cases than in the ewes and the early wet having the highest cases followed by early dry then late dry and lowest in the late rainy season. There was no significant effect of these problems with respect to location of the study area.

## Discussion

The present investigation observed significantly higher cases of multiple births in does than in ewes. This difference may be attributed to genetics and environment. Peacock (1996) reported that goats reproduce very fast with tropical breeds having higher traits for producing twins and triplets. This was similarly reported by Ola and Egbunike (2005) that multiple births were common in goats; with the young doe giving birth to one kid initially and subsequently they start to give birth to twins and triplets. However, the difference may also be linked to difference in feeding habits between the two species. For instance, the goats are able to utilize or feed on less quality feedstuff, and this is an adaptation for the goat species to maintain their body tissue reserves fairly constant for normal physiological functions, even in areas or season of feed scarcity. Similarly, goat is considered superior to other ruminant animals in its utilization of poor quality and high fiber forages, they also have important drought survival strategy in marginal cropping areas



Table 3: Influence of species, location and season on occurrence of reproductive problems in doe and ewes

	Dystocia	Mastitis	Metritis	Neonatal disease	Retained placenta	Cumulative incidence	X <sup>2</sup>	Los
<i>Species</i>								
Does	70 (73.7)	34(54.8)	29(69.0)	52(46.4)	27(61.4)	212	9.49	***
Ewes	24(26.3)	28(45.2)	13(31.0)	60(53.6)	17(38.6)	143		
<i>Location</i>								
Yandev	21(22.1)	11(17.7)	4(9.5)	22(19.6)	5(11.4)	63	26.30	NS
Ipav	18(18.9)	12(19.4)	10(23.8)	23(20.5)	9(20.5)	72		
Mbayion	18 (18.9)	13(21.0)	6(14.3)	18(16.1)	10(22.6)	65		
Mbatyav	16(16.8)	18(29.0)	6(14.3)	26(23.3)	12(27.3)	78		
Mbatyerev	22 (23.3)	8(12.9)	16(38.1)	23(20.5)	8(18.2)	77		
<i>Season</i>								
Early dry	23(26.7)	18(29.0)	13(23.2)	24(21.4)	15(35.1)	102	21.03	***
Late dry	17(19.8)	16(25.8)	9(16.1)	34(30.4)	10(22.7)	86		
Early wet	29(33.7)	20(32.3)	14(25.0)	34(30.4)	12(27.3)	109		
Late wet	17(19.8)	8(12.9)	20(35.7)	20(17.8)	7(15.9)	72		

NS = Not significant, \*\*\*  $P < 0.001$ , Figures in parenthesis are percentages, Los = Level of significance

where mixed farming is prevalent (Dominique *et al.*, 1991; Doma *et al.*, 1999). This present investigation was also in conformity with the observation made by Butswat (1994) that continuous maintenance of doe and ewes in average condition neither too high nor too low will maintain high ovulation rate. High ovulation rate is a reflection of number ova to be brought to fertilization, which may influence the occurrence of multiple births in both species. Therefore, these genetic and environmental factors aforementioned are mainly the reasons for the variation in the prolificacy of the two species.

The non-significant seasonal effect in multiple births between the species disagreed with the reports of Zahraddeen (2006) who stated that in goat litter size was seasonally influenced; with higher value in the wet than dry season. The lower litter size in the dry season might have been due to excessive ambient temperatures and unavailability of feed during the season especially late dry season as had been explained by Butswat (1994). However, the disagreement between the two studies might have been linked to differences in the weather parameters in the two study areas. The present study was carried out in southern guinea savannah, which is characterized with abundant feed supply, more friendly weather conditions as in the sudan savannah zone of Nigeria, where the former investigation was conducted.

The study observed significant difference in cumulative incidence of reproductive problems in ewes and does; with higher incidence in the does than in ewes. This difference is probably accountable to the effect of the rainy season, which the goat species finds unfriendly to their comfort and survival as a result of the incessant rainfall. Unlike the goat species, sheep are more tolerable to wetly environment than goats especially managed under the free-range system. For instance, Zahraddeen *et al.* (2007) reported that goats performed best in the early dry season followed by the late dry and early rainy seasons and lowest in the late rainy season. Similarly, Vandeplasseche (1982) and Abdullahi (1999) observed that some cases of reproductive problems arose consequent to secondary genital tract infections which are aggravated by poor management and inadequate nutrition. This has also been supported by Petters and Ball (1995) who observed that dietary deficiencies, especially of vitamin E and selenium have been known to cause retained placenta.

However, the seasonal effect observed in the present investigation with respect to incidence of reproductive problems in does and ewes is in conformity with the findings of Zahraddeen *et al.* (2007) who reported higher cases

in the wet season and attributed this to cropping activities and higher incidence of pests and diseases which resulted in the imposition of restriction on the animals. The non-significant difference observed in the present investigation with respect to occurrence of reproductive problems in the five locations studied is attributed to uniform management employed in the rearing of these animals by the local farmers. The management of these animals is characterized by low managerial input supply and hence the productivity of the animals is at stake.

### Conclusion

This study concludes that the incidence of multiple births in does and ewes is fairly good compared to the level obtained in these species elsewhere. Also, the high incidence of reproductive problems is mainly attributed to the low level of nutrition in animals generally managed under the small-holder husbandry system in the area. However, this study suggests that improvement in the management practices will greatly enhance multiple births in both species and reduce the incidence of these problems in the study area.

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