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PRE-WEANING MORTALITY OF PIGLET IN ORGANIZED FARM

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ABSTRACT

An investigation was conducted by retrieving data collected on the pre-weaning mortality of Hampshire and Large Black piglets reared under intensive management at 30-Sow Teaching Unit of College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati. The finding revealed that the overall mortality of piglets up to pre-weaning age was 11.73 per cent in which Large Black piglets had more mortality (15.24%) than Hampshire breed (9.05%). Highest mortality was observed in winter season (20.67%) than summer (7.08%) season and also more in male piglets (12.47%) than female piglets (11.04%). More number of deaths were recorded in the month of March (30.46%) and September (12.64%) and at 2 to 5 weeks of age. Further analysis revealed that the various forms of enteritis (45.98%) were the major causes of pre-weaning mortality of piglets.

Key words: Pre-weaning piglet mortality, Hampshire, Large Black, Disease, Sex, Breed.

Pig rearing plays an important role for improvement of socio-economic condition of poor farmers in India. It has a high potential to contribute to high economic gain due to its high fecundity, high feed conversion efficiency, early maturity, short generation interval. It can utilize wide variety of feed stuff to higher dressing percentage. So, pig rearing has been accepted socially and culturally by almost all ethnic groups and it is coming up in the form of commercial farm. However, piglet mortality is a big problem in successful and profitable pig production. Survival of piglets per litter up to weaning along with few closely related factors such as litter size and litter weight at birth are very important factors that determine its profitability. Mortality and morbidity of pig depend on pre-weaning care, management, litter size, age, season and effective health care. The earlier workers [6&11] indicated that the mortality pattern and occurrence of different diseases and disorders may also vary with different genetic groups of pigs. Not all the factors associated with mortality can be controlled, but understanding them will assist the farmers and producers in minimizing death loss observed by the researcher [7]. Mortality pattern in organized pig herd serves as a useful indicator for assessing the status of herd heath and management programme and their efficacy. The first and foremost target of an ideal farm is to reduce the morbidity and mortality rate. Often, there is considerable loss due to the seasonal and routine changes in management, which could be avoided by adopting standard management practices and avoiding unnecessary and abrupt changes in the routine management activities. The earlier worker[1] observed that

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retrospective study on mortality may play a role in forecasting the future occurrence of disease in a particular geographical area. Considering these facts, the present investigation was undertaken to document the mortality pattern of two pure breed pigs in an organized farm.

MATERIALS AND METHODS

The present study pertaining to the pre-weaning mortality of piglets of Hampshire and Large Black pigs was undertaken in 30-Sow Teaching Unit of College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati. The pigs were reared under intensive management practice in concrete pig sties constructed as per the standard space requirements. A herd health programme was followed which involved routine prophylactic and therapeutic measures including treatment of clinical cases, vaccinations against foot-and-mouth disease, swine fever and deworming at regular intervals as per the standard recommendations. The animals were fed with concentrate feed comprised of maize (50 parts), wheat bran (22), deoiled ground nut cake (20 parts), fish meal (5 parts), mineral mixture (2.5 parts) and salt (0.5 parts). The piglets were weaned at the age of 56 days. Data on mortality among pre-weaned piglets of both the breeds were collected from the records of the farm from April, 2004 to March, 2009. Data on total piglets born and died during these periods were collected and their detailed post mortem examination reports done by Department of Pathology, College of Veterinary Science, Assam Agricultural University, Khanapara, Guwahati were evaluated to find out the causes of mortality. The mortality percentage at different ages up to weaning was estimated on the basis of total deaths. Analysis of piglet mortality was done according to month, age, sex, season, and disease.

RESULTS AND DISCUSSION

The results of present finding of pre-weaning mortality of piglets based on month, breed, season, and sex are presented in the Table 1. During the study period, a total of 1483 piglets were born of which 174 piglets were died before weaning i.e. before 56 days of age. The overall mortality was recorded to be 11.73 per cent. Out of 174 piglets that died, the month wise mortality was highest in the month of March (30.46%) followed by September (12.64%), August (8.05%), January (7.47%), April (7.47%), February (6.90%), October (5.75%), June (5.75%), November (5.17%) July (4.60%), May (4.02%), and December (1.72%), irrespective of year of study. The earlier workers [9 &8] also reported 12.18 and 10-15 per cent mortality in piglets from birth to 8 weeks of age. The year-month of birth had a marked influence on piglet survival. Piglet pre- weaning mortality changed across years and across months of the same year as a consequence of changes in the hazard due to several sources of variation such as climate, epidemiologic and management effects. The earlier worker[13] analyzed pre-weaning mortality in piglets and found that year-season was the most important fixed effect for pre-weaning mortality. On average, 12% of newborn piglets die before weaning, and half of these losses occur during the first 3 days of life as reported by[3].

Seasonal variation of piglet mortality was also observed in the present study. The higher mortality of piglet was recorded in winter season (20.67%) than summer (7.08%) season. This indicated a high seasonal effect on mortality on piglets. The stress of cold might be the causes of maximum mortality of piglets during the winter. One of the most significant stressors a pig experiences upon birth is the challenge to adapt to the thermal environment. Unlike many mammals, piglets do not possess brown adipose tissue, a type of fat that enable newborn animals to generate a great deal of heat to maintain body temperature. This fact, combined with very little subcutaneous fat and a lack of significant hair coat as reported by, [17] ill prepares the piglet to

enter a cold environment. The similar observation was reported by earlier worker [13].

Sexwise piglet mortality indicated that overall mortality was higher in male piglets (12.47%) than female piglets (11.04%). The sex of the piglet was a relevant effect for survival where female piglets had 19% less risk of dying than male piglets. Several authors [16, 2 & 10] have reported that female piglets have a greater survival advantage than males. The earlier worker [2] reported that the increased mortality in males was due to more males being crushed and to chilling. A greater basal concentration of cortisol observed in male piglets in comparison with female piglets as observed by [18] may cause male piglets to be more susceptible to detrimental stress effects and to succumb to subsequent diseases.

The overall mortality was higher in Large Black breed (15.24%) than Hampshire breed (9.05%) indicating better adaptability of Hampshire breed in the climatic condition of Assam. Similar difference in piglet mortality pattern in Large White and Hampshire was also reported by other worker [14].

The mortality per cent of piglets on the basis of age in weeks has been presented in the Table 2. It was found that highest numbers of piglets were died on 2nd week followed by 3rd, 4th, 5th week of age where the percentage of mortality was 24.71, 23.56, 13.22 and 11.49 respectively. On the other hand, the mortality was found to be less than 10.00 per cent during 1st, 6th, 7th and 8th week of age being the respective values were as 6.90, 5.17, 5.75 and 9.20 per cent. Higher rate of mortality was occurred during 2-5 weeks of age and was declined thereafter. The decline of mortality with advancement of age could be due to improper development of body's immune system at very early stage which later on gradually develops and defend against various diseases.

The pathological reports of post mortem indicated that the piglets were affected by various diseases (Table 3). Maximum numbers of piglets (45.98%) died due to various forms of enteritis. Other important diseases recorded for mortality of piglets included Septicemia (4.02%), ulcerative gastritis (2.30%), traumatic injury (4.02%), Haemorrhagic gastritis (1.15%), Salmonellosis (0.57%), FMD (0.57%), Pneumonia (13.79%), Pneumonia and enteritis (10.34%) and other (17.24%). From the present result it was observed that piglets became more susceptible to the diseases during the months of March and September every year where the environmental temperature turns from winter to summer and summer to winter respectively. Higher percentage of mortality was due to enteritis during 2nd to 5th week of age. 24 per cent mortality due to enteritis was reported by an earlier worker[3] in piglets up to 8 weeks of age. Many workers [4 & 5] reported that traumatic injury from overlaying of dam was main causes of death of piglets in their first weeks of age. This may be due to the fact that the healthy, active, and stronger piglets often over take the comparatively weaker piglets of same litter in terms of suckling milk from dam. Another cause of death of piglets due to injury was the fighting among the littermates. Gastrointestinal disorder was the major cause of piglet mortality in various farms in Indian condition as reported by earlier workers [1, 12 &15]. In agreement with the present finding, the earlier researcher [13] also observed pneumonia (0.61%), septicemia (9.2%) as major causes of pre weaning piglet mortality along with some other causes.

The year wise piglets born, died and return from the piglets that were survived has been shown in Table 4. The results indicated the economic importance of pre- weaning mortality of piglets. Higher the mortality, lesser will be the return from the sale of piglets.

Table 1 : Pre- weaning piglet mortality according to years, sex, and season

Parameters		No of piglets born	No of piglets died	Mortality (%)
Months	January	125	13	7.47
	February	111	12	6.90
	March	130	53	30.46
	April	122	13	7.47
	May	128	7	4.02
	June	115	10	5.75
	July	130	8	4.60
	August	124	14	8.05
	September	116	22	12.64
	October	128	10	5.75
	November	134	9	5.17
	December	120	3	1.72
Total		1483	174	11.73
Breeds	Hampshire	840	76	9.05
	Large Black	643	98	15.24
Seasons	Summer	975	69	7.08
	Winter	508	105	20.67
Sex	Male	722	90	12.47
	Female	761	84	11.04

Table 2 : Pre- weaning age wise piglet mortality rate in weeks

Age in week	1	2	3	4	5	6	7	8
No of death	12	43	41	23	20	9	10	16
Per cent death	6.90	24.71	23.56	13.22	11.49	5.17	5.75	9.20

Table 3 : Pre- weaning age wise piglet mortality due to different causes

Particulars	HE	HGE	GE	E	P&E	S	UG	TI	HG	Sa	P	FMD	OTH-ERS
No of death	3	30	16	31	18	7	4	7	2	1	24	1	30
Per cent death	1.72	17.24	9.20	17.82	10.34	4.02	2.30	4.02	1.15	0.57	13.79	0.57	17.24

HE= Haemorrhagic enteritis, HGE= Haemorrhagic gastro-enteritis, GE= gastro-enteritis E= Enteritis, P&E= Pneumonia & enteritis, S=Septicemia, UG=Ulcerative gastritis, TI=Traumatic injury, HG= Haemorrhagic gastritis, Sa= Salmonellosis, P=Pneumonia, FMD=Food & Mouth Disease.

Table 4 : Year wise piglets born, died, and return from sale of piglets.

Parameters	2004-05	2005-06	2006-07	2007-08	2008-09
No. of piglets born	364	356	363	238	162
No. of piglets died	41	33	19	52	29
Mortality per cent	11.26	9.27	5.23	21.85	17.90
No. of piglets sold	284	296	290	186	115
Return from Sale of piglets (Rs)	**3,50,399.00**	**3,48,502.00**	**4,43,938.00**	**3,36,806.00**	**2,95,100.00**

CONCLUSIONS

From the present observation it can be concluded that piglets become susceptible during the month of March and September when the environmental temperature turns winter to summer and summer to winter respectively. As higher percentage of mortality was due to enteritis during 2nd to 5th week of age, care should be taken while offering creep ration and water at this age of piglets.

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