

**RETROSPECTIVE STUDY OF PREWEANING MORTALITY OF PIGLETS AT
KANYARIRI VETERINARY FARM FROM 2004 TO 2014.**

A PROJECT SUBMITTED TO UNIVERSITY OF NAIROBI IN PARTIAL COMPLETION OF
BACHELOR OF VETERINARY MEDICINE.

STUDENT: CHEBET JOICE

REG. NO.: J30/2067/2010

SUPERVISOR: DR. MBAI, (BVM, MSc) DEPARTMENT OF CLINICAL STUDIES
UNIVERSITY OF NAIROBI.

DECLARATION.

I declare that this is my original work and no one has presented it for a degree nor diploma in this University or any other University.

Chebet Joice

Date

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This project has been submitted for examination with my approval as the supervisor:

Dr. Ken Mbai

Date

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DEDICATION

I dedicate this to my husband Kirui, for his patience and support and my guardian Peter Nyigei for the support he has given me throughout my education.

ACKNOWLEDGEMENTS.

I thank God for the far he has brought me.

My appreciation goes to my supervisor; Dr. Ken Mbai for his guidance and time he has dedicated for the success of my project.

I also appreciate staff of Kanyariri Veterinary farm piggery unit for assisting me during my data collection.

Special thanks goes to my guardian, mum –in –law ,my husband and my brothers and sisters and my friends for the support and encouragement they gave me throughout my education.

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ABSTRACT.

Piglet pre weaning mortality is a major cause of reproductive wastage in pig production. The study was carried out at Kanyariri veterinary farm University of Nairobi to determine the piglet pre weaning mortality rate and the causes. The objectives of the study was to reduce piglet pre weaning mortality at Kanyariri Veterinary farm University of Nairobi by determining piglet pre weaning mortality rate and investigating the causes of mortality in piglets from the year 2004 to 2014 and suggest measures to be employed to reduce pre weaning mortality of piglets in the farm. Records of all the sows and gilts who farrowed between the year 2004 and 2014 were obtained with the help of animal assistant in charge of the piggery unit. The records included; number of piglets born alive, number born dead, number weaned and number dead and the causes of death.

Data aspect on other causes of piglet mortality other than atresia ani and overlay which were recorded and also the aspect on farrowing management and vaccination of sows were obtained by personal interview of the animal assistant in charge of piggery unit.

A total of 165 sows and gilts were studied for pre weaning mortality of piglets and out of 1751 piglets which were born alive, 395 (22.6%) died before weaning and 68.7% of the deaths occur on the first week of piglets life.50.4% of all the deaths were due to overlay /trauma by the sow and 1% were due to atresia ani and 48.6% were due to other causes like diarrhea, pneumonia ,blindness and miscellaneous causes.

In conclusion there is a high pre weaning mortality in the farm and the major cause is overlay/trauma

CHAPTER ONE.

1.1. Introduction

Kanyariri veterinary farm University of Nairobi is a 375 acre piece of land in Kanyariri village of Lower Kabete. It is 2 km from College of Agriculture and Veterinary Sciences and 15 km from Nairobi city astride Fort Smith Road and borders Fort Smith. The farm has a herd of dairy cattle and a flock of layers in the new farm and a flock of dorper sheep and piggery unit in old farm. The farm has a milking parlour, poultry houses and pig pens, two tower silos, grazing paddocks, animal crushes, a spray race, a tractor, baler, ploughs and forage harvestors. Forage fields include fields of hay, maize for making silage, napier grass and desmodium.

1.2 JUSTIFICATION

Pre weaning mortality is a measure of the number of piglets that did not survive during the suckling period. It results from either infectious or non-infectious factors. Non-infectious causes include; overlaying and crushing by the sow, starvation, chilling, emaciation and stress, whereas infectious causes are scouring or diarrhea, pneumonia and other illnesses. Antibiotic usage to overcome pre-weaning mortality may increase the risk of antibiotic resistance which pose a major challenge to piglets and their future health performance.

The target pre-weaning mortality of <10% can be attained with improved stockmanship, sow nutrition, sanitation and hygiene.(www.altech.com./pre-wean mortality).

1.3 Objectives

1.3.1 General objective.

To reduce pre- weaning mortality of piglets at Kanyariri Veterinary farm.

1.3.1.1 Specific objectives

1. To determine the pre-weaning mortality rate of piglets at Kanyariri Veterinary farm from 2004- 2014.
2. To investigate the causes of piglet mortality in Kanyariri Veterinary farm from 2004 – 2014.
3. To suggest measures that can be employed to reduce piglet mortality at Kanyariri Veterinary farm.

CHAPTER TWO

2.0. Literature review

Preweaning mortality in commercial farms ranges from 10-20% caused primarily by overlaying and starvation. In UK, the Meat and Livestock Commission (MLC 2003) reported a pre-weaning mortality of 10.2% in confined herds and 9.9% in outdoor herds.

Reasons for nursing piglets' mortality given by Swine 2000. National Animal Health monitoring system. USDA-APHIS, part III p.7

Scours	8.2%
Laid-on	55.5%
Starvation	17.0 %
Respiratory problem	1.6%
Other known problems	8.6%
Unknown problems	9.1%
Total	100%

2.1 Factors causing pre weaning mortality.

2.1.1 Birth weight

Is directly proportional to energy intake of the sow during pregnancy(Baker et al.1969) and Libal and Wahlstron(1977) found out that the weights of piglets increased as gestation energy of sow increase but level out at about 26.4 MJDE/day.

As litter size increases from <11 to >16, birth weight decreases from 1.59 to 1.26 kg and therefore pre weaning mortality increases (Quiniou et al.2002). Uterine blood flow and hence fetal nutrition decreases as litter size increases (Pere et al. 1997). In litters of low average birth weight high variation in weight contributes to decreased survival (Millighan et al. 2002). Low birth weight piglets have a high risk of dying from asphyxia during delivery (Herpin et al.1996). Fetal weight gain is rapid in last 10 days of pregnancy so supplementing feed at this time increases birth weight and decreases pre weaning mortality. Increasing neonatal survival is by higher degree of maturity or fetal development during late gestation (Leenhouders et al.2002).

2.1.2 Farrowing crate design

Neonatal mortality from trauma in closely confined sows has been reduced compared to sows farrowing in unconfined areas. Jones et al. (2003) assessed 7 different farrowing systems and found out that the best and consistent system was a crate with fully slatted floor with preweaning mortality rate (PWMR) of 11.8% followed by non-restrained system with fully slatted floor and a hinged gate which allows the sow to turn around 5 days post partum with PWMR of 15.11% and non-restraint system with straws performed worst with PWMR of 20.22%.

2.1.3 Spatial arrangements

Space requirements of piglets are relative to the thermal environment. In farrowing pen there are 2 zones: a safe zone for piglets (creep area) where they can rest free from the sow and it must be attractive and large enough for suckling piglets of all ages and must be comfortable for them and an interaction zone where sow and piglets occupy a common space. Under hot conditions a rectangular creep area about 1.3M² will provide adequate space for about 10 piglets of 3 weeks of age (Barter 1989).In cold conditions they huddle and use 60% of space they would use in warm conditions. Interaction zone is the most dangerous area and greatest risk for piglets occur

when a sow changes posture (to stand, sit, lie down or move about) (Svenden et al.1986) as piglets prefer to lie against walls or close to dam. Danger increases if sow move suddenly.

2.1.4 Heating

Piglets have a lower critical temperature(LCT) of about 30-34 degree Celsius whereas sows have an LCT of 15-19 degree Celsius (Baxter 1989).When deep body temperature is 39 degree Celsius at LCT 34 degree Celsius the piglet can generate heat through increased metabolism and conserve heat to a limited degree by piloerection and vasoconstriction. When environmental temperature falls below 34 degree Celsius, the piglet is subjected to cold stress and must utilize glycogen and fat reserves to maintained body temperature. Coldness impairs thermo stability and induces hypothermia. If body temperature is decreased by 2 degree Celsius, piglet vigor is severely decreased, sucking is less vigorous hence less colostrums is consumed resulting in low IgG serum level (Le Dividich and Noblet 1981; Kelley et al.1982).

In creep area overhead heaters are better than heated pads for lightweight piglets because of their higher surface area. Electric or gas heater are most commonly used but additional factors are required to attract piglets away from a sow towards the creep area e.g. good quality beddings like sawdust, shredded papers, wood shavings etc. which raises environmental temperature relative to concrete floors by 8 degree Celsius and is attractive to piglets(Welch and Baxter 1986)

2.1.5 Interaction of people and pigs

Trained staff have a positive effect on the number of piglets weaned and reduces neonatal mortality (Prime et al.1989)..Sows fearful to humans are more likely to have a higher stillbirth rate than others. (Hemsworth et al. 1999).High level of self discipline in stock person is

associated with high preweaning performance whereas poor preweaning performance is associated with exaggerated self assuredness and boldness. Ravel et al.(1996a).

2.1.6 Tooth clipping

Sibling fights occur during establishment of teat order in first few days and subsequently as they defend their teat –order position against littermates(Fraser 1975);Hartsock et al.1977).Injury may be inflicted to faces of littermates or the sow’s udder. Most farms clip these “needle teeth” in the first 1-2 days after birth to avoid potential problems (Robertson and Arey, 1998). Poorly performed teeth clipping can result in serrated or splintered teeth and gum damage which greatly increase the risk of infection and contribute to pre weaning mortality of piglets.

2.1.7 Fostering

Average birth weight piglets are not competitive when mixed with larger piglets and this contributes to pre weaning mortality (English and Smith 1975). If piglets with birth weight <1kg are left on their dam, pre weaning mortality is high (62.5%) compared to fostered groups with equivalent weight (15.4%) (Marcatti Neto , 1986).Piglets fostered according to weight grow faster with reduced mortality .

(Straw 1997) cautions against fostering in older piglets as fostered piglets grow less rapidly than piglets left with their dam as most of them will not have suckled 6 hours after being moved to new dam after 2 days of age.(Price et al.1994),an increased level of fighting and lacerations in fostered piglets, sow aggressiveness and non-reproductive milk letdown(Robert and Martineau 1997).

Successful fostering occur if piglets are fostered only on first day, only available teat space is filled, piglets are not moved between different rooms, severely sick piglets are euthanized and

no piglets that are doing poorly are moved back to younger age groups.(McCaw and Desrosiers, 1997).

2.1.8. Hygiene

Good pen hygiene reduces preweaning mortality. Thorough cleaning and disinfection of empty sow crates help to reduce environmental microbial burdens and pathogens that may be exclusive to piglets. Morbidity and mortality associated with gastrointestinal diseases is higher in herds with poor hygiene standards (Svenden et al. 1975).High preweaning performance is associated with routine washing of farrowing crates between litters (Ravel et al.1975).

Sow factors affecting preweaning mortality

2.2.1. Pre farrowing behavior

Manipulating environment of young sow affect pre farrowing behavior and piglet survival (Cronin and Smith 1992; Cronin et al.1993, 1994, 1998; Thodberg et al.1999, 2002 a,b).Stimulating nesting behavior in young sows lead to sows appearing calmer before parturition, having shorter intrabirth intervals or fewer stillbirths (Cronin et al. 1993),McGlone et al. 1996 and Thodberg et al(2002a). Small narrow farrowing pens interferes with sows pre farrowing nesting behavior leading to increase in sow restlessness during and after farrowing and a reduction in piglet survival. (Cronin et al. (1998).

2.2.2. Litter size

As litter size increases, birth weight decreases and the number of small pigs per litter increases and pre weaning mortality increases (Spicer et al .1986a, Dyck and Swiestra , 1987).

2.2.3. Sow health

There is an increase pre weaning mortality in sick sows due to overlaying (Spicer et al. 1986a)

2.2.4. Stillbirths

Represents about a quarter of all deaths between parturition and weaning. They vary from 4-10% and veterinary intervention is required if it exceeds 8%. Most are alive at birth but are anoxic which can be due to compression or premature rupture of umbilical cord during farrowing (Randall 1978), and they die within minutes of birth. As duration of farrowing increases beyond 4-5 hours or after 80% of piglets have been born the number of stillbirths increases.

Sows kept in stalls during gestation have a higher stillbirth rate than sows kept in pens due to longer farrowing time in stalls. (Svenden and Andreason 1980).

There is an increase stillbirth rate in fat sows.(Bilkei-Papp and Papp 1994).

There is an increase in stillbirth rates with increasing parity.

As sows age the duration of parturition increases and hence the percentage of stillbirths except for parity one sows which have a higher percentage of stillbirths.

Sows that had multiple stillbirths at previous farrowing have an increased chance of farrowing multiple stillbirths at the next farrowing.

The percentage of stillbirths is higher during summer (7.3%) than winter (6.4%) in temperate regions. Stillbirths can be reduced by; cooling sows during summer, inducing parturition in old sows, providing close supervision of high risk sows including manual assistance after the 7th piglet has been delivered and interpiglet intervals exceed 30 minutes.

2.3 Induction of parturition

Effective supervision of farrowing can reduce stillbirths and pre weaning mortality on farms (Holyoake et al. 1995)

Parturition can be induced 3 days on either side of average gestation length for the herd but piglet survival and vigor are highest when farrowing is induced on the due date for the sow. Farrowing earlier than day 112 or after day 118 results in increased number of stillbirths. Farrowing is commonly induced by intramuscular injection of PGF2 alpha or a synthetic analog (Dial et al .1 987)

Using PGF2 alpha to initiate parturition followed by Clenbuterol(induce uterine relaxation) and Corazolol(a beta blocker that blocks adrenaline receptors in uterus and allow a lower level of oxytocin to initiate parturition)/oxytocin has been successful for farrowing needing special supervision. At 9.00 am the sows are dosed with 10mg PGF2 alpha; sows not farrowed by 4.00 pm are injected with 150 micrograms Clenbuterol to reduce the chance of overnight farrowing; parturition is reinitiated the following morning using 10 IU oxytocin plus 1.8mg Corazolol (Spicer et al. 1986).

2.4 Causes of pre weaning mortality in intensive pig farms

2.4.1 Enteritis

Most common infectious cause of mortality in suckling piglets. Causative agents include; TGE virus, porcine adenovirus, calivirus, Aujeszky's disease virus, Coronavirus, rotavirus, enterotoxigenic E.coli ,Clostridium perfringens type A and C,Salmonella spp,coccidian and Strongyloides ransomi.

Risk factors for enteritis: (Svenden et al. 1975)

1. Parity

Prevalent in gilts due to lack of specific antibodies for piglet protection.

2. Litter size.

Incidence increase with litter size due to lack of access to protective milk antibodies. Also increase in sick and dysgalactic sows.

3. Season

Incidence higher in winter due to effect of cold stress especially in small piglets

4. Hygiene

Higher level of mortality from diarrhea due to low levels of hygiene.

5. Age

>60% of deaths occur during first week of life, with 10.5% occurring in 2nd week and 1.3% each week thereafter upto weaning. Deaths during the first 5 days of life are usually due to colibacillosis, from day 5 to weaning are due to coccidiosis (Driensen et al. 1993) and enterotoxigenic E.coli (Fahy et al. 2003)

6. Intercurrent disease.

53% of those that died have intercurrent disease or disabilities eg. polyarthritis, respiratory disease, were small or starved piglet or had been overlain.

2.4.2. Overlay/trauma

Most common non-infectious cause of death of suckling pigs born alive. Most deaths occur within 4 days of birth. Occur more often in larger litters, in sow rather than gilt litters (Svenden et al. 1986) and in free stall crates than crates with modifications such as finger bars (Walker et al. 1996)

2.5.Reducing pre weaning mortality of piglets

Pre weaning mortality rate can be reduced by staff training and attention to detail in the farrowing house (Cutler et al. 1989).Induction of parturition with constant staff supervision from 3 hours before farrowing to 3 days later can reduce pre weaning mortality and stillbirths (Holyoake et al.1995).

Pre weaning deaths and stillbirths can be reduced and weaning weight increased by; attending farrowing and implementing care protocol involving provision of oxygen, drying the piglets, tying the umbilicus, providing bovine colostrum supplements and placing newborn piglets on teat.

In addition to the above the following measures provide a basis for decreasing neonatal mortality;

1. Provision of written instructions about piglet survival for staff
2. Thorough hygiene programs for the farrowing house and processing equipments
3. Creep areas that are dust free and comfortable .sawdust, wood shavings, shredded papers or straw are suitable bedding materials.
4. An additional heat lamp provided towards the rear of the sow during the farrowing period and for 24 hours afterward to reduce chances of chilling newborn piglets and to provide an extra (lateral) creep area.
5. Freeing newborn piglets from placenta, drying them, clearing airways of mucus.
6. A heated crib for care of sick piglets and to house temporarily small piglets (<800g bwt) or piglets from large litters during split suckling sessions.

7. Supervision of piglets to ensure access to colostrum or supplementation with colostrum substitutes (upto 100 ml/ day) or milk replacer by bottle or stomach tube especially for small weak piglets or for piglets in large litters.

8. An active fostering program based on cross fostering within 48 hours of birth.

9. Regular inspection of sows health and providing prompt treatment for the sick.

Sow health can be assessed by;

1. Assessing water availability. Sows require up to 40 L/day during hot days.
2. Assessing feed intake. Take average of 6-7 kg /day between farrowing and weaning.
3. Observing fecal consistency, urine (color and presence of pus), vulvar discharge, vomiting, skin pallor, skin wounds, udder condition, abdominal bloat and lameness.
4. Checking rectal temperature. Normal is 39 +/- 0.5 degree Celsius but may exceed 40 degree Celsius during hot weather.
5. Checking respiratory rate. Normal resting respiratory rate is 12-30 beats per minute increase during hot weather.
6. Considering past history including genetic susceptibility to stress.

10. A vaccination program against neonatal colibacillosis.

CHAPTER THREE

3.0. MATERIALS AND METHODS.

3.1 Study area

The study was carried out at Kanyariri Veterinary farm University of Nairobi in Kanyariri village of Lower Kabete, 2 km west of upper Kabete campus University of Nairobi, 15 km from Nairobi town astride Fort Smith Road, bordering the historical Fort Smith. The farm has a herd of dairy cattle, flock of dorper sheep, a piggery and poultry units. The farm is located on a 375 acre piece of land.

3.2. Study design

The farrowing and weaning records and the causes of piglet pre weaning mortalities of all the sows and gilts who farrowed between 2004 and 2014, which came to a total of 165 sows and gilts were taken and analyzed for pre weaning mortality rate of piglets. The records taken include; number of piglets born alive, number born dead, average birth weight, number of piglets weaned, parities of sows and gilts and causes of death and the dates each death occurs.

Data on aspects of farrowing management, supervision during farrowing, vaccination of sows and other causes of death other than atresia ani and overlay and crushing by the dam which were on the records were obtained by personal interview of the animal assistant in charge of piggery unit.

3.3 Data management and analysis

The data was collected and saved in a computer and manually in a file. It was analysed using Analysis of Variance method (ANOVA).

Pre weaning mortality in litters with high average birth weight was compared to that of litters with low average birth weight. Pre weaning mortality in litters with low average birth weight was higher than that of litters with high average birth weight. Most low birth weight piglets are weak and can't suckle and hence can't get colostrums and most die due to starvation and infections as they lack antibodies. Most are also crushed by their dam as she lies down as they are too weak to save themselves by moving away from the dam or making noise to alert the supervisor to save them.

Pre weaning mortality in large litters was compared to that in small litters. Pre weaning mortality was high in large litter size. Most piglets especially the smaller ones can't compete with others to suckle and hence starve and also most are laid on or stepped on by the sow as she moves or lie down.

Pre weaning mortality rate of piglets was compared in sows in different parities. Pre weaning mortality was high in older sows compared to younger sows except in those in parity 1 due to lack of specific antibodies for piglet protection.

Pre weaning mortality was compared in piglets of different ages. 68.7% of the deaths occur in the first week of life of piglets.

CHAPTER FOUR

RESULTS

The pre weaning mortality rate of piglets at Kanyariri Veterinary farm between 2004 and 2014 is 22.6% and overlay/trauma contributes 50.4% , atresia ani 1% and others like diarrhea, pneumonia, blindness, hypothermia contributed 48.6%.

68.7 % of the deaths occur on the first week after the piglets were born and most of the causes of the deaths were low birth-weight and overlay and atresia ani.

Pre weaning mortality was increasing with parity except for gilts.

Pre weaning mortality rate was high in litters with low average birth weight as compared to those with high average birth weight, was also high in large litter size than small litter size.

Stillbirth rate is 6.7%

Year	Piglets born alive	Still births	% of piglets weaned	% of piglets dead	Causes of deaths in %		
					Overlay trauma	Atresia ani	others
2004	191	6	67.5	32.5	9.7	0	90.3
2005	156	22	72.4	27.6	0	9.3	90.7

2006	210	17	88.6	11.4	20.8	0	79.2
2007	159	9	91.2	8.8	57.1	0	42.9
2008	266	12	85.7	14.3	52.6	0	47.4
2009	38	4	73.7	26.3	100	0	0
2010	66	2	80.3	19.7	92.3	0	7.7
2011	169	12	74.6	25.4	81.4	0	18.6
2012	209	11	73.7	26.3	67.3	0	37.2
2013	159	24	69.8	30.2	62.5	0	37.5
2014	128	7	64.8	35.2	80	0	20
TOTAL	1751	126	77.4	22.6	50.4	1.0	48.6

CHAPTER FIVE.

DISCUSSION OF RESULTS.

Pre weaning mortality is a major constraint in pig production. According to this study it was a major cause of losses in the farm with a rate of 22.6%. 50.4% of the deaths were due to overlay/trauma which is due to poor supervision during farrowing and also low birth weight as piglets with low birth weight tend to be weak and they are easily crushed by the sow as they can't move quickly and also when they are laid on by the sow they can't raise an alarm by screaming to be saved by the farrowing assistants.

Weak piglets also may fail to suckle as they can't compete with others and they may starve to death and also they may not get colostrum and they become susceptible to diseases like colibacillosis causing mortality.

Pre-weaning mortality was high in litters with low average birth weight as compared to those with high average birth weight. This is because most piglets with low birth are weak and they will not compete with others to suckle and may fail to get colostrum and they become susceptible to diseases as they lack antibodies which they would have gotten from colostrum. In addition most of these piglets are crushed by the sow as they are weak and also can starve to death if they fail to suckle.

Pre-weaning mortality was high in large litter size compared to small litter size. This is because when piglets are many some may fail to suckle as functional teats in the sow may be fewer than them. When piglets are many in the pen the sow can easily crush them as she lies down or when walking. Average birth weight also decrease with increase in litter size and number of small and weak piglets increase hence increase in pre-weaning mortality.

Pre-weaning mortality was increasing with increase in parity of the sows except for gilts which is due to lack of specific antibodies for piglet protection. Older sows have high pre-weaning mortality which could be due to uterus not able to supply enough nutrients during pregnancy leading to birth of weak piglets which most die before weaning.

68.7% of the deaths occurred in the first week of piglets life and the major causes were overlay/trauma by the dam and a few due to atresia ani. From the interview of the animal assistant most overlay/trauma occurred in sows farrowing at night due to lack of supervision. Atresia ani could be due to inbreeding as boars in the farm are not disposed regularly.

Some piglets were born blind and they all died after birth. This could be due to parvovirus infection as also there were mummies and many still births in the farm.

Fostering was only done when a sow died while suckling so variation in weights of piglets could have contributed a lot in pre-weaning mortality as the smaller ones can't compete with others in establishment of teat position and they get those teats producing less milk or may even fail to suckle.

According to animal assistant in charge of piggery units most piglet mortalities occurring in June and July was due to pneumonia and chilling in those born during that time as during this period it is cold.

Most stillbirths were occurring in older sows which could be due to uterine exhaustion.

Most piglets die when their dam is sick because the sow is restless and can easily crush them especially if they are less than one week of age. Sow may also fail to produce milk when she is sick and piglets starve if not detected early.

Stillbirth rate was 6.7% which was within normal range of 5-10% (merck's manual). In-uterine deaths are due to infection, incorrect position in uterine horn during delivery or anoxia when umbilical cord ruptures or becomes constricted because of the extreme length of uterine horn, can also occur due to low temperatures in farrowing house, low hemoglobin level ($<9\text{g/dl}$), increase in time interval between pigs born eg. due to uterine exhaustion, atony of the uterus or dystocia.

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

Conclusion.

There is a high pre weaning mortality in Kanyariri veterinary farm piggery unit. It is 22.6% which is higher than normal range of 10-20% in commercial pig farms (**Diseases of swine by Barbara E. Straw, Jeffrey J. Zimmerman, Sylvie D'Allaire, David J. Taylor. 7th edition**)

Supervised farrowing alone can help to reduce piglet pre-weaning mortality as it minimizes stillbirths, facilitates access of piglets to needed warmth, allows for observation of nursing activity, and prevents crushing. Other ways of reducing pre weaning mortality include cross fostering, split-suckling in large litters, pre-partum vaccination of sows, appropriate feeding of lactating sows and thorough hygiene in farrowing house. With implementation of the above in addition to recommendations below in Kanyariri Veterinary farm piggery unit losses due to piglet pre weaning mortality can be reduced greatly.

Recommendation.

1. Sows should be supervised during farrowing upto 3 days later to reduce pre-weaning mortality due to crushing by the sow.
2. During farrowing, piglets should be freed from placenta, dried, umbilicus tied and piglet placed on teat to suckle colostrum.
3. Written instructions on piglet survival and any causes of death should be provided to staff in farrowing house and also be placed on entrance to the farrowing house where they can easily see.

4. Farrowing pen should be thoroughly cleaned and disinfected and also during sweeping of the pens the broom should be disinfected after every pen to avoid transferring pathogens from one litter to the next.
5. Crib area should be warm, free of dust and comfortable.
6. A heated crib for care of sick piglets and to house temporarily small piglets should be provided.
7. An active fostering based on weight should be done within 48 hours of birth, when necessary.
8. Regular inspection of sows health and prompt treatment should be done to any sick sow.
9. Sows should be vaccinated against E. coli and Clostridia infections. For sows this should be done one month to farrowing and in gilts it should be done twice at 2 months to farrowing and one month to farrowing for them to get antibodies against the above which they can pass to their piglets hence making them immune to colibacillosis and clostridial infections.
10. Samples should be taken to the lab to check for parvovirus as there are mummies being born in the farm and if there sows should be vaccinated.
11. Sows and gilts who are about to farrow should be taken to the farrowing house early to avoid them farrowing in dry sow house where piglets can die due to chilling or the dam can crush them.
12. Boars should be disposed regularly and new ones recruited to avoid in breeding in the farm.

CHAPTER SEVEN.

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