
Effect of Male Mating Time on Landrace Pig Reproduction

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Abstract

Pig livestock is one of the livestock developed in Indonesia because it can adapt to environmental conditions, has good production and reproduction properties including fast growth so that the body matures and quickly, the number of liters of labor size is large, birth weight and weaning weight are high, meat production is high and can also meet human needs. To meet human needs for protein and the economy, it is necessary to increase the production and productivity of pig livestock by paying attention to reproductive aspects, and nutrition. This study aims to determine the influence of the time interval of male mating in nature which affects the conception rate, liter size, and mortality. This research was carried out in Catur Village, Kintamani District, Bangli Regency from April to August 2022. This study uses a quantitative descriptive method by mating males at time intervals and observing the results directly. The number of livestock used in this study was 6 landrace sows consisting of 1 sow mated with males at intervals of once a week, 2 heads mated at intervals twice a week, and 3 heads mated at intervals of three times a week. The variables observed in this study were conception rate, liter size, and mortality. The results showed that the interval of mating time influenced the conception rate value and the number of liters of size. The best interval from the results of this study is one mating in a week, namely a conception rate of 100%, the number of liters size 9 heads. And the time interval of mating has no effect on the mortality of the child at birth.

Keywords: Livestock; landrace pig; male mating time; reproduction

1. Introduction

With the increasing population, the need for food of animal origin such as meat for consumer purposes is getting higher, so there is a need for a strategy to increase livestock production and productivity, including pig livestock. A factor that affects the production and productivity of livestock is genetic quality. So far the use of males is good for natural mating, IB (Artificial Insemination) and TE (Embryo Transfer) are the technologies and strategies that are developed effectively and efficiently for improving the genetic quality of livestock, especially in pig livestock.

Generally, people are very fond of raising pig livestock because they can produce children in large numbers of births, and obtain a lot of calves so that the children sold are many. Things that need to be considered to obtain a lot of offspring at birth and weaning must be considered at the exact time of mating, be it natural mating or artificial insemination [1]. The advantages of pig livestock include the nature of production and reproduction. Pig livestock has important properties including the number of cubs born per mother per birth, birth weight, number of loose calves, and weaning weight. This is strongly influenced by intermarriage between nations and the frequency of lambing from the parent [2]. Sows have several important properties, namely the number of cubs born per mother per birth, birth weight, weaning weight, and the number of loose calves. International mating and the frequency of lambing from sows (parity) greatly affect the number of cubs born, birth weight, and weaning weight [2]. The difference in the birth weight of piglets is influenced by the ability of the fetus of the sow to digest the nutrients given at the time of bunting and the number of offspring. A large number of children in one birth will give a low birth weight and also vice versa a small number of children will give a high birth weight [3]. Factors that influence the number of children are the mother's age, nation and parity [4], genetics, management, lactation duration, disease, and stud fertility [5]. A large number of offspring is influenced by the use of males or the time interval of mating. In addition to the time interval of use of males, feed, livestock conditions, and the

environment greatly affect the conception rate and the number of children born. A feed with high nutritional value will provide good spermatozoa quality and much motile sperm so that they can fertilize eggs and occur pregnancy, while livestock and environmental conditions regarding livestock health and weather/climate are supportive so that livestock do not experience stress.

2. Materials and Methods

This research was conducted in Catur Village, Kintamani District, Bangli Regency from April to August 2022. This study used a quantitative descriptive method by mating males at certain intervals and observing the results directly. The number of livestock used in this study were 6 landrace broods consisting of 1 brood mated with a male at intervals of once a week, 2 tails mated at intervals of twice a week, and 3 tails mated at intervals of three times a week.

The variables observed in this study were the level of conception, the number of litter sizes, and mortality. Observations were made on 6 broods with different mating intervals. Data collection for this study was carried out by calculating the value of the level of conception, the number of litter sizes, and mortality. CR value; can be calculated by counting the number of mating females (nature) divided by the number of all mating females multiplied by 100%. The number of litter sizes; can be calculated by counting the number of children born / tail divided by the number of parents. Dead; can be calculated from the beginning of birth to three weeks of breastfeeding, then divided by the number of live births multiplied by 100%.

3. Results and Discussion

Data from the observation of the time interval of mating males with landrace sows can be seen in Table 1.

Table 1. Effect of the mating time interval between males and landrace sows

Reproductive performance	1 mating a week	2 matings a week	3 matings a week
1. Conception rate (CR) value (%)	100	100	33
2. Number of liters size (tail)	9	7	7
3. Mortality (%)	0	0	0

The results showed that the time interval of using males to mate once a week to three times a week gave an unequal conception rate (CR) or pregnancy rate and a different number of offspring at each parent's birth. Mating one to two times a week high stalemate numbers that are marked do not return to the lust of the mated brood. While the use of males for mating three times a week occurs in the first brood and the second and third broods return to lust which is characterized by swollen vulvas, clear discharge, and restless discharge, the vulva feels warm when palpated the tail will be raised and when pressed the back will be still. The conception rate at mating three times a week is 33%. Males are used for mating once a week the number of liters of size produced is 9 heads, and males are used twice a week the first brood numbers 11 cubs, and the second brood has the number of offspring 2 heads. While they use three times a week the number of cubs in the first brood is 7 heads and the second and third broods are 0 heads. In addition, the use of males once a week to once every three weeks the mortality of children born is 0%. The influencing factors include frequent stud use time so that the quality of spermatozoa decreases and is unable to fertilize eggs, ovulation, improper mating time, parent condition, and nutrition which affects the number of pregnancies and the number of liters of birth size. The low rate of pregnancy is due to low ovulation and improper mating time both naturally and artificially (IB) [6]. In addition, it is caused by the difference between the female nation and the inseminator that is used when cattle are mated with IB. And it is also caused by the fertility of females [7]. the rate of gardening is influenced by the mating system of sows. The rate of farming pigs with a natural system is higher than that of the IB system [1]. In addition, factors are genetics, uniform feed, treatment management, and health [8].

Mating of sows is carried out by selecting males for mating. Before mating, lust detection is first carried out to ensure that the cattle are ready to receive males for mating which is characterized by the appearance of symptoms of lust/estrus. Cattle showing symptoms of lust will be mated 30-36 hours after the onset of estrus [9]. Estrus is a condition in which the female livestock wants or wants to be mated by males. Symptoms of estrus are that the pig is restless, does not want to eat, the vulva swells, is silent when its back is pressed and the pig will respond with a position ready to mate, the pig sometimes salivates and a sluggish sound. The duration of the pig's lust is 2.8 ± 0.4 days, during the lust the sow wants to be mated by the male [10], the length of lust is 2.97 ± 1.69 days [11], and for 3 days [12]. The duration of the estrus cycle is the length of time from estrus to the appearance of the next estrus. If the sow is not mated, of course, there will be no tampering, and it will cause re-estrus. The duration of the estrus cycle of pigs ranges from 17.8 ± 1.40 days to 15-20 days [12]. The normal range of the estrus cycle in pigs is 18-20 days [13]. The mating time of livestock must be carried out on time so that the percentage of gardening tests is higher, if it is done too early or when the lust has ended, there will be no fertilization/disbursement, and the percentage of gardening is low. Mating in sows and pigeons should be based on the peak of lust because it affects the performance of piglets [3]. Too early mating will lead to failure of fertilization because sperm enter early in the tuba fallopian before an egg is released, and the sperm will die. Vice versa, if the marriage is carried out too slowly and the egg is too mature for more than six hours, it will cause sperm to enter one egg to fertilize [14]. Polyspermy that occurs will cause fertilization failure because it produces new creatures with several chromosomes more than normal so that it is lethal and dies before implantation occurs [15].

The value of the conception rate (CR) or the stain rate in the results of the study for mating using males once to twice a week the stain rate is 100%. While the use of males for mating three times a week the conception rate value is 33%. The average CR value of the results of the study on the use of males once and twice a week is 100%. The mating system affects the rate of blindness where the natural method of mating (93.23%) is better than the artificial insemination method (81.64%) [1]; The interval of cement storage to the inseminated sow's farm rate was 94.4% [16]; The fertility rate of sows in two different farmer patterns and insemination with fresh cement and liquid cement was 81.10% [17]; The fertility rate of sows infested with fresh cement and liquid cement is 44.0% [18]. Livestock that has a high fertility rate CR value can reach 60% to 70% and if the CR after the first insemination is lower than 60% to 70% it means that the fertility of the livestock is disturbed or abnormal. Cr values in IB mating were 73.33% higher than in natural mating 63.67% [19]. The high or low rate of pregnancy or CR in natural mating is due to the interval of use of males for natural mating as well as the difficulty of obtaining males when sows show symptoms of lust for mating. Mating that is carried out incorrectly in time, such as mating too early or during missed lust can lead to failure of fertilization (fertilization) so that the percentage of pregnancy is low [3]. Different pregnancy rates are caused by several factors namely genetics, uniform feed, treatment management, and health [8].

The number of liters of child size is the number of children born in one birth in each parent. The liter size of the study results was 9 heads for the use of males mating once a week, 7 heads for the results of the use of males for mating twice a week, and 7 heads for the results of the use of males for mating three times a week. The natural mating system and IB had a marked effect on the live-born litter size, 10.12 and 9.26 heads [1]. According to [20] the number of liter sizes averages 6 heads, and the low liter size is related to the feed consumed by the mother being insufficient and the condition of the mother itself. In addition, the age of the mother, the nation of the mother, the milk production of the mother, the condition of the feed mother, and the stud used [21]. The number of liter sizes is influenced by the time of use of males where the use for mating is often the number of liters of a low size and vice versa. The difference is due to several things such as the nation of sows used, the level of observation of lust and the accuracy of mating both naturally and Artificial Insemination [6]. According to [4], litter size is the effect of the results of the fertility of broods with males as well as a control management system carried out both during mating and during maintenance. Litter size will be influenced by the age of the parent, nation, and parity. The mating system has a marked effect on the rate of pregnancy and litter size of live birth, where mating is naturally better than artificial insemination [1]. The number of children born will increase in the third and fourth births, subsequent births will stabilize in the seventh birth, and so on will decrease [5].

[14], sows will ovulate an average of two ova compared to pigeons. The seventh parity of the ovulation rate is still increasing but in general, sows are thought to be at the fifth and sixth parties. This is done due to the low percentage of gardening caused by the reproductive function that begins to decline. According to [22]), the more mature the mother, the more her life weight increases followed by the maturity of the reproductive organs, thereby increasing the capacity of the uterus and allowing for maximum fetal development.

The mortality of the results of research on the use of males is 0%. The use of males does not affect stillborn offspring. The mortality of piglets before weaning reaches 60% due to sows, and low nutrition which leads to low milk production [23]. Other causes of child mortality are abortion, lack of nutrition, disease, and pinching [24]. Child mortality is also caused by stress, diseases such as lethargy, anorexia, body shaking, and loose stools [25]. To reduce the mortality rate of piglets, some things that need to be considered, including; housing management, post-lambing parent maintenance management, mother and child health, mothering ability, availability of vitamin drugs and vaccines, environmental factors, cage hygiene, and sanitation [26].

Conclusion

The results showed that the interval of mating time influenced the conception rate value and the number of liters of size. The best interval from the results of this study is one mating in a week, namely a conception rate of 100%, the number of liters size 9 heads. And the time interval of mating has no effect on the mortality of the child at birth.

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