Reproductive Performance of Female Bali Pigs in Gerokgak District, Buleleng Regency

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Abstract. Bali pig is a meat-producing livestock commodity that has great potential to be developed because it has beneficial properties and abilities, but its presence in Bali is very few and only found in certain areas, such as Karangasem, Nusa Penida and Buleleng. The maintenance of Balinese pigs cannot be separated from the socio-cultural customs that exist on the island of Bali. In an effort to develop and increase the productivity of Bali pigs, reproductive performance (pregnancy duration and calving interval) plays an important role, and the productivity of a sow is determined by litter size and farrowing rate in a year. This study aims to determine the reproductive performance used to describe the productivity of Bali pigs in Gerokgak District, Buleleng Regency. The method used is a survey method and direct interviews in the field with livestock farmers/groups using a questionnaire (question list) related to the reproductive performance and productivity of Bali pigs. The data collection was targeted at 100 adult female Bali pigs >10 months. Furthermore, the data obtained were analyzed descriptively. The results showed the average number of reproductive performance as follows: age of sexual maturity 6.23 months, age of sows at first mated 7.74 months, gestational age 106.46 days, liter size 8.73 tails, weaning age 57.2 days , calving interval 180.89 days, forrowing rate 16.76 tails and mortality rate 5.

Keywords: bali pig; reproductive performance; productivity level

1. Introduction

Pig is one of the meat-producing livestock commodities that has great potential to be developed because it has beneficial properties and abilities, including: fast growth rate, high number of children per birth (litter size), high ration efficiency (70-80%) and a high percentage of karkan (65-80%) (Siagian, 1999). In addition, pigs are able to utilize food scraps or agricultural waste into high-quality meat and have unique reproductive characteristics because pigs are animals that have prolytic properties, namely a high number of litter sizes (10-14 heads / birth) and the distance between one birth. with short subsequent births (Sihombing, 2006).

The Balinese pig on the island of Bali is a hybrid of a local wild pig with a South China pig. The results of this cross are often referred to as Balinese pigs by the people of North, Central, West and South Bali (Tan Hok Seng, 1957). The high population of pigs on the island of Bali is due to the suitability of the Balinese pigs with their environment and also supported by customs and cultural traditions in Bali that use pigs in every traditional and religious

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ceremony and in several areas in Bali such as in Buleleng Regency there are still fanatics have to use Balinese pigs in traditional and religious ceremonies. The high demand is in addition to fulfilling public consumption activities and traditional and religious ceremonial activities,

Based on a survey in the community, it is known that babi guling derived from native Balinese pigs has a fairly high market appetite. This condition is an opportunity for breeders and culinary entrepreneurs to develop livestock business in providing beef and Balinese pork for food stalls and pork guling restaurants. And this is a challenge for the intensive development of Balinese pigs as well as developing one of the genetic resources of Bali pigs, which is the original Balinese germplasm.

In the effort to develop and increase the productivity of Balinese pigs, reproductive performance plays an important role in relation to efforts to increase production. The reproductive performance includes the estrus cycle, signs of estrus, duration of gestation, number of children per birth (litter size), childbearing rate in a year (farrowing rate), weaning age and weaning weight. The productivity of a sow is determined primarily by litter size and farrowing rate. Ardana and Putra (2008); Sudiastra and Budaarsa (2015); Suberata, et.al (2016) stated that the higher the litter size and farrowing rate of a parent, the higher the productivity is expected. In addition to sows (females), the reproductive performance of males.

Currently, basic information/data regarding the reproductive performance of Bali pigs is still very limited. Based on this, this study was conducted to determine the reproductive performance of Bali pigs in the province of Bali, especially in Gerokgak District, Buleleng Regency, making it easier for efforts to increase the Bali pig population and furthermore the results of this study can be used as consideration in determining policies related to with efforts to increase the production of Bali pigs as one of the original Bali germplasm.

From the above, the problem can be formulated as follows:

Do Balinese pigs in Gerokgak District, Buleleng Regency show a high number of children per birth (litter size) and a high rate of childbearing in a year (farrowing rate)?

Does the reproductive performance of Balinese pigs in Gerokgak District, Buleleng Regency show a high level of productivity?

The aim of this research is

This study aims to determine the number of children per birth (litter size) and the rate of childbearing in a year (farrowing rate) of Balinese pigs in Gerokgak District, Buleleng Regency.

This study aims to determine the reproductive performance of Balinese pigs in Gerokgak District, Buleleng Regency.

2. Method

2.1 Location and Length of Research

This research was conducted in the Gerokgak District, Buleleng Regency, Bali Province, which is 120 km from the provincial capital. The research was conducted for 6 months starting from survey, data collection, tabulation and data analysis and reporting.

2.2 Research Objects and Tools

The object of research used in this study was female Bali pigs / breeders owned by smallholder farms / livestock groups in the Gerokgak District, Buleleng Regency. The age of female Bali pigs / sires is more than 10-18 months with a sample of 100 heads.

2.3 Research Method

Sampling in this study was conducted by survey method with direct observation in the field. Sampling by purposive random sampling (Sudjana, 2002). Samples were taken based on predetermined criteria. An exploratory approach was used to describe the reproductive performance of Bali pigs.

Data collection includes: estrus time, estrus cycle, signs of estrus, duration of pregnancy, calving interval, litter size and farrowing rate. Data was collected by interview technique using a list of questions (questionnaires) and additional information obtained through direct observation in the field.

2.4 Data Analysis

Tabulation was carried out on primary and secondary data and then analyzed descriptively according to Steel and Tomie (1995).

3. Results And Discussion

3.1 Characteristics of Respondents

Research data on the reproductive performance of livestock depends on the information provided by the respondent. From the research results provide an overview of the characteristics of the respondents as in table 5.1.

Table 1. Respondent Characteristics Table

No	Respondent	Percentage
1	Gender	
	* Man	15.79%
	* Woman	84.21%
2	Age	
	* 30-40 years old	47.38%
	*41-50 years old	34.21%
	* 51-60 years old	11.84%
	* >60 years old	6.57%
3	Education	
	* No school	2.63%
	* Graduated from elementary school	97.37%
4	Livelihood	
	* Farmers/Farmers	100%

The table above illustrates that the role of women in raising livestock is 84.21% and men only 15.79%. The high involvement of women in raising livestock shows that women play an important role in efforts to support the family economy. This is in accordance with the opinion of Suradistra and Lubis (2000), that the involvement of women in the livestock business is an effort to increase the economic resilience of the family. The age of the respondents showed as many as 47.38% aged between 30-40 years. Furthermore, those aged 41-50 years were 34.21% and the age group of 51-60 years was 11.84% while those aged more than 60 years were 6.57%. From these data, it can be said that local Balinese pig farmers in Gerokgak District, Bulleng Regency are at a productive age in raising pigs.

The education of the respondents varied from not attending school and only finishing elementary school. The results showed that the education of respondents who did not go to school was 2.63% and those who finished elementary school were 97.37%. The low level of education of respondents provides information that pig farmers in the research location have low knowledge of raising livestock. According to Murtiyani et.al (2005) reported that the higher the level of education of farmers, the knowledge of livestock rearing management is getting better because farmers are easy to adopt innovations and change mindsets in solving problems more maturely. The respondents' livelihoods as farmers/breeders reached 100%. Thus it can be said that the livelihoods of the people in the research location are an inseparable part of socio-cultural life.

3.2 Bali Pig Reproductive Performance

In the effort to develop and increase the productivity of Bali pigs, reproductive performance (pregnancy duration and calving interval) plays an important role, besides that, the productivity of a sow is determined by litter size and farrowing rate in a year. The results showed that female sows experienced sexual maturity at the age of 5-7 months, the first mating began at the age of 6-8 months. Other reproductive performance such as estrus (2-4 days), after the estrus cycle (15-17 days), gestation period (105-115 days), weaning age (50-60 days), litter size (5-15 tails), calving interval (180-210 days or 6-7 months) and farrowing rate (11-29 birds). In this study, the mortality rate per birth was 0-4 individuals. In table 5.

Table 2. of Average Reproductive Performance of Local Bali Pigs in Gerokgak District, Bulleng Regency

No	Reproductive Performance	Balinese Pig	Standard *
1	Sexual maturity (months)	6.23	5 – 8
2	Parent starts mating (month)	7.74	8 – 10
3	Signs of lust	restless, decreased appetite, red and swollen vulva, silent if the back is held	restless, decreased appetite, red and swollen vulva, silent if the back is held
4	How to marry	Natural	Natural and IB 114
5	Length of pregnancy (days)	106.46	>10
6	Liter size (tail)	8.73	21-28
7	Weaning age (days)	57.2	>20
8	Calving Interval (days)	180.89	>140
9	Forrowing rate (tail)	16.76	
10	Mortality (%)	5.46	

Based on the table above shows that the reproductive performance of local Balinese pigs in Gerokgak District, Buleleng Regency, this is in accordance with the opinion of Toelihere (1993) and Faradis (2010) that a sow reaches puberty at the age of 5-8 months and can be bred for the first time. at 8-10 months of age. The mother pig when in heat shows signs, including: restlessness, does not want to eat, her vulva swells, is silent when her back is held and salivates. Mother pigs experienced 2-3 days in estrus with an estrus cycle of 18-20 days, gestation period 114 days, calving interval >140 days. Meanwhile, the results of the study on litter size and forrowing rate were lower than the standard, namely <10 and <20 individuals. In general, the reproductive performance of Balinese pigs is not much different from other crossbred pigs. It's just that genetically, the reproductive ability of Bali pigs is slightly below that of other crossbred pigs. Therefore, efforts are needed to increase their genetic potential so that reproductive performance can increase the productivity of local Balinese pigs.

The results of this study are in line with the results of research by Sumardani and Andika (2016) on Balinese pigs in Karangasem Regency where the age of sexual maturity is 6.65 ± 2.18 months, the age of the mother at first mating is 7.98 ± 2.05 months, the length of lust is 2.97 ± 1 .69 days, estrus cycle 16.5 ± 3.20 days, gestation period 110 ± 2.59 days, litter size 6.98 ± 2.37 tails and calving interal 151.06 ± 6.30 days.

The results of observing the performance of Balinese pigs at the observation location are as shown in the following figure.

Figure 1. of Local Balinese Sow with Balinese Piglets

In the effort to develop and increase the productivity of Bali pigs, reproductive performance plays an important role when it comes to efforts to increase the production of Bali pigs. The reproductive performance includes: estrus cycle, signs of estrus, duration of gestation, litter size, weaning age and forrowing rate. The productivity of a sow is determined mainly by the number of litters born to a parent (litter size) and the annual forrowing rate. The higher the litter size and forrowing rate of a mother mother, it can be expected that the productivity will be higher in a year (Ardana and Putra, 2008; Sudiastra and Budaarsa, 2015; Suberata et.al, 2016).

4. Conclusion

Bali pig farming is mostly done by women (84.21%) with productive age (30 – >60 years) and 100% main livelihood as farmers/breeders, but the level of education is low.

In general, the reproductive performance of Bali pigs at the study site was in accordance with the standard, but the performance of litter size (8.73 tails) and forrowing ratre (16.76 heads) was still low/below the standard.

References

[1]. Ardana, I.B and D.K.H Putra. 2008. Pig Livestock Reproduction, Production and Disease Management. Udayana University Press. Denpasar.

[2]. Central Bureau of Statistics. 2016. Profile of Indonesian Women 2011-2015. Cooperation of the Ministry of Women's Empowerment and Child Protection with the Central Statistics Agency. Ministry of Women's Empowerment and Child Protection (KPP and PA).

[3]. Ferradis. 2010. Livestock Reproduction. Alphabet. Bandung

[4]. Hartatik T, Soewandi B.D.P, Volkandari S.D, Tabun A.C, Sumadi. 2014. Identification Genetics of Local Pigs, Landrace and Duroc Based on Qualitative Analysis. In: SUSTAIN. Yogyakarta (Indonesia): Gadjah Mada University. Q. 1-6.

[5]. Hartatik T. 2013. Genetic Analysis of Local Livestock. Yogyakarta (Indonesia) : Gadjah Mada University Press

[6]. Murtiyeni, D. Priyanto and D. Yuliastiani. 2015. Characteristics of Sheep or Goat Breeders with Rearing in Shepherds and Angon and Their Relationship to the Level of Adoption of Technological Innovations. National Seminar on Animal Husbandry and Veterinary Technology. 2005.

[7]. Siagian H.P 1999. Pig Livestock Management, Diktat Lectures Department of Animal Production Science. Faculty of Animal Husbandry, Bogor Agricultural University, Bogor.

[8]. Siagian H.P 2014. Pig Production in Indonesia. Animal Genetic Resources Knowledge Bank in Taiwan (Internet). (cited 24 November 2014). Available from: http://www.agrin.tlrigov.tw/English/2014Swine/p175-186.pdf

[9]. Sihombing, D.T.H 2006. Pig Livestock Science. Ed. 2. Gadjah Mada University Press. Bulaksumur, Yogyakarta 55281.

[10]. Steel, R.C and J.H Torrie. 1995. Statistical Principles and Procedures. Main Library Gramedia. Jakarta.

[11]. Suberata, I.W, N.L.G Sumardani and N.M Artiningsih. 2016. Study of Ovarian Activity of Slaughtered Female Pigs in Traditional Slaughterhouses. Animal Husbandry Scientific Magazine. 19(1) 2016 : 80-83.

[12]. Sudiastra, I.W and K. Budaarsa. 2015. Study Of Exterior Diversity And Reproductive Characteristics Of Bali Pigs. Animal Science Magazine. 18(3) 2015: 100-105.

[13]. Sudjana. 2002. Statistical Methods. Tarsito Publisher. Bandung.

[14]. Sumardani, N.L.G and I.N Ardika. 2016. Population and Reproductive Performance of Female Bali Pigs in Karangasem Regency as Germplasm. Animal Science Magazine. Vol. 19.

[15]. Sumardani, N.L.G, D.A Warmadewi, I.N Tirta Ariana, and R.R Indrawati. 2010. Combination of Steaming-up and Flushing Methods in Increasing Litter Size of Landrace Pigs. Animal Science Magazine. 13(3) 2010 : 94-97.

[16]. Tan Hok Seng. 1957. Attems to Improve the Bali pig by Introducton Saddle Back Swine. Rep. from Communications Veterinariae No. 1, Vol. I., 45-67.

[17]. Toelihere M.R 1993. Artificial Insemination in Cattle. gauze. Bandung.

[18]. Yan Tonga, N.M Yudiastari, and IG Sutapa. 2020. Identification of the Qualitative and Quantitative Characteristics of Bali Pigs in Gerokgak District, Buleleng Regency.