



Reproductive Performances of PE Doe in Simalungun District

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Abstract

The success breeding business of PE goat is closely related to reproductive performance and mortality rates between maternal and calve so that a case study is needed on the reproductive performance of PE Doe. The study was conducted in Taruna Sejahtera Group in Simalungun District, North Sumatera. Twenty nine of PE Does was used. Method was case study. Data was taken from recording list and interview then anlyzed descriptively. The results showed that reproduction characteristics of PE Doe: puberty age 10 month, first mating age 14 month, litter sizes 2 heads, weaning age 2 month, days open 90 days (3 month), post partum mating 4-7 month, calving interval 10 month, milk production averaged 1,2 liter/head/day and parity 4-5 times/head.

Keywords: PE Doe, reproduction characteristic

Introduction

The rate of Indonesian population growth on a national scale along with the progress demand of animal protein needs. Milk is one of the animal protein whose consumption level is increasing, especially milk from goats, along with amount of need for dairy goats is increasing to fulfill the need of milk. According to animal husbandry and veterinary statistics, in 2012 the goat population is 17.91 million heads which increased if compared to the population in 2011 which amounted to 16,946,186 heads. This number increased around 5.66%, then in 2013 the goat population increased to 18,576,192, increase of 3.7% from the previous. This data is on goats, both meat and dairy goats. Dairy goats are only a small part of the population. So the contribution to meet the need of milk from dairy goats is still low (Directorate General of Animal Husbandry, 2013).

Peranakan Ettawa (PE) is a goat that quite productive and adaptive to Indonesia's environmental and climate conditions, especially in Simalungun district of North Sumatra. PE goats are liked by community farmers because the maintenance management is easy and inexpensive. PE goat has good reproductive biology potential

such as puberty is 6-10 months, body matures (reproductive organs are ready to be pregnant) at the age of 10-12 month when the body weight reaches 55-60 kg. PE goat has an average weight 40.2 kg for doe and 60 kg for buck which is used as a producer of milk and meat. In addition, the number of lambs born (litter size) as much as 1.3 to 1.7 head, with a relatively short interval of 240 days (Sutama. 2007). Having a height for male / female 70-100 cm, with an body matures weight reaching 40-80 kg for buck and 30-50 kg for doe, which functioned as a producer of milk and meat (Sutama. 2011). The average milk production of PE goat according to the results of Budiarsana and Sutama (2001) was 1308.44 ± 212.84 g / h / d for single births and 1434.51 ± 354.10 g / h / d for twins.

Many Various efforts have been done by the government to increase the productivity of domestic goats. Many types of dairy goats have been imported both in live animal and frozen semen to be crossed with local livestock to produce crossed goats. Furthermore, in order to achieve the target of the need for animal protein, the government has conducted guidance on livestock groups, one of them is Taruna Sejahtera group in Simalungun District.

Guidance for farmer groups includes aspects of cultivation technology, mating technique and feeding system. It is hoped that this group can help businesses achieve food self-sufficiency, especially protein from milk. The success of breeding business is closely related to reproductive performance and mortality rates between maternal and calve. With the background above, it is necessary to conduct a case study related to the reproductive characteristics of PE Does in the Taruna Sejahtera group, Simalungun District, North Sumatera.

Materials and Methods

The study was carried out in April 2016 at the farm site of Taruna Sejahtera group in Karang Sari village, Gunung Maligas sub-district, Simalungun District, North Sumatra. The material used was 29 PE Does. The method used is survey. Reproductive performance data includes Parity, Milk Production, Days Open, Postpartum Mating, Weaning Age, Calving Interval (CI), Litter Sizes (LS), Puberty Age and First Age of Married (FAM) kid lambs obtained from group records and interview with 14 farmers. The data obtained were analyzed descriptively.

Results and Discussion

1. Puberty and first mating age

Puberty (sex mature) is the age or time that reproductive organs begin to be function and breeding system can occur. Puberty in female livestock is a phase or condition where the livestock show the first signs of estrus on the influence of estrogen hormone (Feradis 2010). The puberty age of PE goats in this farmer group has an average of 10 months according to the results of the study which states about 10-12 months (Tomaszewska et al. 1993) and longer than the research of Utomo (2011) which stated that puberty age in PE goats around 8-10 months.

The first mating age of livestock is the age of being called an body mature, where the condition of livestock is ready to carry out reproductive activities, namely the body is ready to carry out the pregnancy process.

Average first mating age in this farm group is at the age of 14 months. This condition is close to the results of Attabany et al. (2001) which stated that the first age mating in PE goats reached 403.32 days (13.44 months). The first mating age in this group was faster than reported by Suranindyah et al (2009) i.e at the age of 15 months. However, the first age mating at this time was slower than the results of the study of Syakur (2006) that first mating age of 6 to 10 months then be mated at 10-12 months (55 - 60 kg). The difference of first mating age in this group is caused by many factors. These factors are farmer's understanding about estrus of goats and mating time, availability of good buck, and feeding system.

The slow puberty and first mating age of PE goats in this group is probably influenced by weaning time, where the length of lactation period in this group is only about 2 months. While the age of 2 months is predicted too young to be weaned, so it is possible to slow down the activation of the reproductive system in it's lamb. This also was caused by intake nutrition about milk from maternal that was not utilized optimally so that the growth and development of a doe kid reaching puberty and first mating age is slower than some other research results.

2. Litter sizes

Litter size is the number of lamb in one birth. PE goat is a local goat that has a fairly good reproductive performance, especially high genetic potential in the number of lamb in one birth (Sakul et al. 1994). Litter size is the productivity of livestock in reproducing. The number of lamb in one birth determines the fertility level of female animals (Devendra and Burns, 1994). According to Inounu (1996) stated feeding with a higher level of nutrition before ovulation will increase the amount of ovulated ovum, where the number of ovulated ovum more than one has the opportunity to increase the number of lamb in a birth.

The number of lamb who born in this group amounted 2 heads. This number is higher than the results of several researchers

who reported that the number of litter sizes of PE goats was high relatively at 1.3–1.7 head (Adriani et al. 2003; Utama 2007) The high litter sizes in these farms prove that their feed and reproduction management is quite good, where if the nutritional intake and nutrients needed are fulfilled according to the needs of the livestock, the reproductive system is normally active. If the reproductive system is normally active and nutritional intake fulfilled and highly nutritious, the process of maturing ovum is quite good to produce high quality ovum that can ovulate more than one ovum. Thus mating management and pregnancy maintenance also have optimally function.

The number of lamb with various litter sizes from 1 to 3 heads. High and low of litter sizes are influenced by genetic factors, parent age factors, parent body weight and nutrient levels (Doloksaribu et al. 2005), environment and climate (Hardjosubroto, 1995).

3. Weaning age, days open and post partum mating

Weaning age is the period when the lamb is separated from the doe. The weaning age of this group has average of 2 months. This weaning age is faster than the Aprilinda Sundari et al (2016) reported that PE goat weaned at the age of 3.61 months. This condition is due to farmers expecting that milk production is more optimal and can increase family income.

Days Open is the length of time after the doe has given birth to the pregnant again. Murdjito et al. (2011) stated that Days Open (DO) is the length of time the goats after giving birth until they are pregnant again normally between 2-3 months. The empty duration shows the time interval between giving birth and conception again (Hafez and Hafez 2008).

Days Open of PE goats in this study were for 3 months (90 days), this condition was longer compared to the results of Syukur's research (2006) which reported that animal pregnant returned after 2 months (60 days) of calves. But the results of this study have a shorter time compared to the results of Badriyah et al. (2014) which states PE

112.3 ± 30.27 days in natural marriage and 104.4 ± 21.32 days in Artificial Insemination (AI) mating. Days open in this study obtained relatively stable in each individual, this condition occurs might the reproduction management has been programmed quite well, besides that the animal shed has also been distinguished based on their reproductive physiological status so that the management of mating is more controlled.

Days open in an animal are influenced by several factors. If the mating is using AI technology, days open is influenced by insemination techniques, quality of semen which is used, parent estrus quality, animal health, parent fertility and management including recording, accuracy in estrus detection and adequate nutritional value (Hafez and Hafez 2000). Repeatedly of days open indicate that reproductive management is good. Susilawati and Affandi (2004) stated long DO is caused by several things such as the high failure of artificial insemination so that the S / C becomes high, first age of mate is slow and body weight gain is low.

Postpartum mating is the time when the doe be mated again after giving birth, so it determine the length of calving interval. According to Utomo (2013) postpartum mating in PE goats in coastal areas and mountainous areas was 4.2 months and 4.6 months respectively. Postpartum mating of PE goats in this study ranged from 4-7 months. Postpartum mating in this group is longer than Sundari Aprilinda et al (2016) that reported postpartum mating in PE goat is 2.69 ± 0.48 months. The comparison of other reports that postpartum mating ranged of 45 - 180 days for Bligon goats (Murdjito et al., 2011) and 122 days for Bligon goats (Rustadi, 2008).

Postpartum Mating is one indicator of quality reproductive management on a farm. Postpartum mating is mostly influenced by postpartum care especially nutritional adequacy and it's fulfillment. In addition, Postpartum mating is also influenced by other reproductive management such as weaning and milking time. The duration of postpartum mating in this group was due to

a long period of milking on the doe about 4 months, where farmers considered it was still more profitable than mated at 3 months postpartum.

4. Calving Interval

Calving interval is a period between one giving birth to the next ones. Calving interval is the most important character to assess productivity and it is the best index for evaluating reproductive efficiency in a group of livestock in the field. Calving interval is determined by the length of the pregnancy and the length time before pregnancy. According to Utama (2011) stated the calving interval in PE goats is 8 months.

Calving interval of PE goats in this study was obtained for 10 months. This time

is longer than results of several reports of research on PE goats which have 8.33 months (Rustadi 2008) and 240 days (Sodiq and Sumaryadi, 2002). Other goat species such as Bligon averaged 8.53 months with ranged of 7-12 months (Murdjito et al. 2011), West African Dwarf goats averaged 275.68 ± 608 days (9.2 months) with a span of 187 to 478 day (Odubote's 2000). The length of the calving interval in this study was related to lactation time, that the milk was milked for up to 4 months to be sold to meet basic living needs of the farmer's family. However, this timing is still in accordance with the results of Utama's study (2007) with ranged of 8-10 months.

Tabel 1. Productivity Characteristic of PE Goat in Taruna Sejahtera Group

NO	VARIABEL	Jumlah/Rataan	Satuan
1	Jumlah Ternak		
	• Doe	29	Heads
	• Buck	1	Head
	• Lamb	40	Head
2	Length of pregnancy	5	month/ period
3	Mortality of lamb	2	% / parturition
4	Parity	4-5	times/head of doe
5	Milk production	1,2	liter / day
6	Days open	3	month/ period
7	Postpartum Mating	4	month/parturition
8	Age of weaning	2	month/period of partus
9	Calving Interval	10	month / period
10	Litter size	2	head/ parturition
11	Puberty age	10	month/ period
12	First age of married	14	month/ period

5. Milk production

Production of PE goat milk is still very diverse (0.45-2.1 liters / day) and single birth rates often occur, even though these animals have the ability to give birth more than one lamb per partus. A common way to increase milk production is through improved maintenance management including feeding, which primarily aims to increase substrate flow to the mammary glands. Milk production will increase if the increasing in substrate flow is also increasing in erythematous glandular secretory cells, which mainly occur during

pregnancy. The growth and development of the udder gland is regulated by the progesterone hormone, which is secreted by CL and also influenced by placenta. So the synergy of nutritional and physiological factors (genetic) determines the level of milk production. To a certain extent, increasing feed levels can increase milk production.

Production of PE goat milk in this study is shown in Table 1. Production of PE goat milk In the Taruna Sejahtera group has an average of 1.2 liters per day. This result is not too different with the study which

stated that production of PE goat milk on average was 1.0 - 1.5 liters / day (Gustiani and Mulijanti. 2010). While the AKA et al. (2008) stated that the production of PE goat milk caged in group was 1.24 kg / day and if is caged individually 1.01 kg / day. Next, Budiarsana & Utama (2001) reported that there was a tendency in goat PE to decrease milk production continuously during 24 weeks of lactation.

6. Parity

Parity is the number of indexes calve birth from a maternal of animal even though the calve is born alive or dead. Parity is one of the reproductive cycles and is closely related to other reproductive traits such as mating and pregnancy, especially amount of milk production in the lactation period. According to Tiesnamurti et al. (2003) that parental parity has a direct role in the performance of milk production at the beginning of lactation where the parent in the 3rd parity is able to produce the highest milk production and has time to achieve the fastest milk production when compared to other parity sequences.

The PE goat's parity in this group has a range of 4-5 times for each does. If the doe has parted 4 or 5 times (depending on reproductive health conditions) then the goat will be rejected / sold. Thus the maintenance period of productive age of PE goats in this group is around 5-6 years. While milk production in this group has a daily average of 1.2 liters / day.

Conclusion

The results of this study concluded that some reproductive performance of PE goats in the Taruna Sejahtera group was quite good as follows: 2 heads of size litter, Parity 4-5 times / parent, 1.2 liter / day milk production, 90 days (3 months) of days open and 2 months of weaning age. However, some other characteristics such as: First Mating age 14 months, Post Partum Mating range 4-7 months, Calving Interval 10 months and puberty age 10 months are still need improvement. Even though such conditions are already profitable, they are not satisfactory. Management improvements

are needed so that the results are more optimal.

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