

Artikel

REPRODUCTIVE PERFORMANCE OF CROSSBREED GOATS ETAWAH IN KULON PROGO REGENCY

Triswanto¹, Nono Ngadiyono¹, dan Sumadi²

¹Department of Animal Production, Faculty of Animal Science, Universitas Gadjah Mada, Yogyakarta 55281

²Department of Animal Breeding and Reproduction, Faculty of Animal Science, Universitas Gadjah Mada, Yogyakarta 55281

*Corresponding Authors:
triswanto@mail.ugm.ac.id

ABSTRACT

The purpose of this research is to know the effect of age on reproductive performance of Crossbreed goat etawah in Kulon Progo regency in a productive age. The object of this research is the respondents and their Goats as the research material that is the Doe Crossbreed goat Etawah which is 1.5 until 3 years old (poel 2 to 3 pairs). The method used in this research is a survey through an interview using a questionnaire. Location is determined by population level that is population high, middle and low in Sub Girimulyo and Samigaluh. The observed reproduction performance was litter size, postpartum estrus, postpartum mating, service per conception and lambing interval. The research data is conducted by Independent T-test. The results showed that the litter size, postpartum estrus, postpartum mating, service per conception and lambing interval were not significantly different between the age of poel 2 and poel 3. The litter size poel 2 and 3 were 1.65 ± 0.54 and 1.72 ± 0.55 . Postpartum estrus goat poel 2 is 4.37 ± 1.23 and goat poel 3 is 4.46 ± 1.19 . Postpartum mating goats poel 2 and 3 are 4.38 ± 1.23 and 4.46 ± 1.19 . The number of lambing intervals of crossbreed goat etawah poel 2 and 3 respectively were 9.54 ± 1.35 and 9.60 ± 1.28 . Service per conception of crossbreed goat etawah poel 2 equal to 1.28 ± 0.65 , poel 3 equal to 1.22 ± 0.55 . It can be concluded that the reproductive performance of crossbreed goat etawah at the productive age of 1.5 to 3 years is not affected by age.

Keywords: Crossbreed Goats Etawah, Reproductive Performance

INTRODUCTION

Crossbreed Goat Etawah (PE) is one of the potential goat to be developed in Indonesia. PE goats are dual purpose goats, which produce meat and milk. Doe PE goats can produce an average of 2 to 3 liters of milk per day with a lactation period of more than 150 days. At present, efforts to develop PE goats as milk producers continue to be improved both through research and assistance

to groups of PE goat breeders.

Kulon Progo Regency is one of the districts in Special Region of Yogyakarta Province which is the source of Crossbreed Goat Etawah seeds. The population of PE goats in Girimulyo is 13.173 tails, Samigaluh is 9.451 tails, Kokap is 4.926 tails and Pengasih is 1.858 tails. The potential of PE goats in Kulon Progo is expected to be explored as a major producer of seeds, meat, and milk which is reflected in its productivity. Productivity is a

combination of production and reproduction displayed by livestock. Production can be measured on quantitative variables (body weight and body measurements) and qualitative characteristics (exterior) on PE goats, while reproductive success will greatly support livestock productivity improvement besides feed and management factors. Good reproductive performance of livestock accompanied by good livestock management will result in high reproductive efficiency followed by high livestock productivity. High and low efficiency of livestock reproduction is influenced by the conception rate, the lambing interval, the time interval between lambing to pregnant again (days open), the mating rate per pregnancy (service per conception), and the lambing rate. This study aims to determine the effect of parent age on the reproductive performance of PE goats at productive age in Kulon Progo Regency, to support the improvement of the quality and quantity of PE goats in Kulon Progo Regency.

Materials And Methods

This research was conducted in Kulon Progo Regency, namely Girimulyo and Samigaluh Sub-Districts, which were divided into 3 categories. The selection of research sites is based on the population, namely high (T), medium (S) and low (R) populations. Selected locations are in Jatimulyo Village (T), Purwosari Village (S) and Giripurwo Village (R) in Girimulyo District, Banjarsari Village (T), Gerbosari (S), and Purwoharjo (R) Village in Samigaluh District. Material used in this study were farmers as respondents and their goats as research material, namely Doe PE goats aged 1.5 years to 3 years (poel 2 to 3 pairs) (Tomazsweska et al., 1993). The method used in this study is a survey through interviews using questionnaires.

Reproductive variables observed included litter size, postpartum estrus, postpartum mating, service per conception and lambing interval. The number of litter size, postpartum estrus, postpartum mating and service per conception are obtained based on interviews with farmers, while the lambing interval is obtained based on calculations using the following formula:

$$IK = LB + LS + SE \left(\frac{S}{C} - 1 \right)$$

Which:

IK is lambing interval

LB is Length of Pregnancy

SE is Estrus Cycle

S/C is Service per conception

Data obtained from the results of the study were tabulated and analyzed using Independent Sample T-test.

RESULT AND DISCUSSION

The condition of Goats at the study site

This research was conducted in Girimulyo and Samigaluh Subdistricts, Kulon Progo Regency with a total of 6 villages with enclosures with ground floor and most of them are dominated by stage floors. Breeders do not have a complete recording of PE goats that are kept and generally do not do milking.

Goats used as samples generally have drooping ear features, convex facial profile, long ears and feathers dominated by white and black. Bucks have longer fur than Does, especially in the hind legs of the mane. These characteristics are in accordance with those mentioned by Heriyadi (2004), that PE goats have characteristics between the Kacang Goat and the Etawah Goat, that is the curved upper nose, ear length between 15 to 30 cm and hang down and slightly stiff, color varying between black, white and brown, bucks have thick, rather long feathers under the neck and shoulders, whereas does feathers are rather long at the bottom of the tail towards the foot line. Besides, the body size is relatively high, 65 to 86 cm, slender and relatively large compared to the Kacang goat. Hartatik (2014) added the PE goat whiskers are quite large, in the back of the thighs, tail, and long hairy chin. Bucks have thick and rather long hair under the neck and shoulders, whereas Does hair is rather long under the tail in the direction of the foot line. Short and small horns, the lower jaw is more prominent than the upper jaw.

Reproduction Performance

Reproductive performance is all aspects concerning animal reproduction. Reproductive appearance can be in the form of age at the first time of lust, age at first mating and lambing for the first time, onset of lust after lambing, number of mating per pregnancy, lambing interval and days open (Hardjosubroto, 1994). The reproductive performance of a does is determined by various

factors such as the length of the mating seasons, the lust cycle, the ovulation rate, the fertility rate, the postpartum anestrus period, the growth and ability to live for the lamb during the preweaning period. The level of reproductive performance can be measured and expressed as a litter size at lambing and weaning, lambing interval and the length of the reproductive cycle (Elieser et al., 2012).

Litter Size

Litter size is the number of lambs born at lambing. Litter sizes are crucial for the rate of increase of goat populations. High litter size will affect population increase (Sudewo et al., 2012). The average research results of the litter size can be seen in Table 1.

Table 1. Litter size of PE goats aged 1.5 to 3 years

Age	N	Litter Size (tails)
Poel 2	373	1,65 + 0,54 ^{ns}
Poel 3	373	1,72 + 0,55 ^{ns}

NS=Non significant

Based on the table, it can be seen that the number of litter size for PE goats in Kulon Progo Regency is not significantly different between the age of Poel 2 and Poel 3. The number of litter size ranges from 1.65 to 1.72 tail. The figure obtained in the study is higher when compared to Davendra and Burns (1994) which states that the litter size for PE goats is 1.5 tails per lambing. This is influenced by the parity factor of the goat, where the Doe PE in Kulon Progo is in parity 2 and 3. Sudewo et al., (2012), states that the litter size tends to increase from the first to the sixth parity, with a peak in the litter size the sixth is 1.96 ± 0.32 . Litter size starts to decrease at the seventh parity.

The number of litter size of goat age *poel 3* is higher than of *poel 2*. Kostaman and Sutama (2005) state that the litter size of a doe is determined by three factors, the number of eggs produced per lust and ovulation, fertilization and conditions during pregnancy and embryo death. These three factors depend on the age of the doe, body weight, buck for mating, ambient temperature and genetic of the parent. A high litter size will be followed by a high rate of death of lamb and also by a decrease in the lambing weight of the lamb. Susilowati (2007) explained that doe PE is a prolific (fertile) goat and produces 1 to 3 lamb per lambing and body weight between 35 to 45 kg in does, whereas in bucks ranging from 40 to 60 kg depending on quality seeds and maintenance management.

Postpartum Estrus

Based on research, the postpartum estrus rate can be seen in Table 2.

Aged	N	PPE (month)
Poel 2	373	4,37 + 1,23 ^{ns}
Poel 3	373	4,46 + 1,19 ^{ns}

NS=Non significant

The results showed that age did not affect the postpartum mating rate. This result is higher when compared with Rasminati and Setyo (2012), which states that the postpartum estrus of PE goats is 3.5 months. The postpartum estrus rate reaches 4 months, this is influenced by the breastfeeding factor. Lamb that is born will be allowed to suckle until weaning, which is 3 to 4 months. This is consistent with what was stated by Murdjito et al., (2011), stating that postpartum estrus was influenced by one of them by breastfeeding. Does who are breastfeeding will anestrus two to three times longer than those who are not breastfeeding. In addition, while breastfeeding, ovarian and estrous activity may not be observed for more than 2 or 3 months, especially if the energy consumption is low. Also added by Hafez and Hafez (2008), which states that postpartum estrus is influenced by the lust of doe. Several factors that influence the emergence of estrus after breeding include genetic, environmental and metabolic factors. Parasmawati et al., (2013) states that does after lambing can be mated again after 90 days or after weaning their offspring because by that time the reproductive tissue has recovered.

Postpartum Mating

Postpartum mating is the distance between the time of arranging the first mating after lambing to the implementation of artificial insemination or natural mating. Postpartum mating occurs after 4 to 5 months after lambing (Sutama, 2009). Postpartum mating PE goats in Kulon Progo Regency are presented in Table 3.

Table 3. Postpartum mating of PE goats aged 1.5 to 3 years

Age	N	PPM (Month)
Poel 2	373	4,38 + 1,23 ^{ns}
Poel 3	373	4,46 + 1,19 ^{ns}

Based on the table, age does not affect postpartum mating rates. The results showed that the maintenance of PE goats in Kulon Progo has postpartum mating of 4.38 and 4.46 months. This result is in accordance with that stated by Utama (2009) which states that postpartum mating occurs after 4 to 5 months after lambing, Utomo (2013) of 4.6 months in mountainous areas. This result can occur because it is influenced by the postpartum estrus rate. Hafez and Hafez (2008), stated that the mating period after lambing is influenced by the onset of the first estrus after lambing. Several factors that influence the onset of estrus after lambing include genetic, environmental and metabolic factors. Parasmawati et al., (2013) added that does after lambing can be mated again after 90 days or after weaning their offspring, because by then the reproductive tissue has recovered.

Lambing Interval

Based on research, PE goat lambing interval numbers are presented in Table 4.

Table 4. Lambing interval of PE goats aged 1.5 to 3 years.

Age	N	IK (Month)
Poel 2	373	9,54 + 1,35 ^{ns}
Poel 3	373	9,60 + 1,28 ^{ns}

NS=Non significant

Based on the table, the lambing interval is not affected by the age of the doe. The lambing interval in the study was 9.54 to 9.60 months. This result is higher than Utomo's study (2013) of 240 days (8 months), whereas the research results are lower when compared with research by Suranindyah et al., (2009), stating that the lambing interval of PE goats in the Turi area is 10.0 + 3.3 months. This is because it is influenced by postpartum mating and postpartum estrus. Tambing et al., (2001), sooner or later doe for estrus return after lambing will affect the lambing interval. The longer of lambing interval will reduce the reproduction efficiency. Susilowati (2007) also added that the lambing interval is also influenced by the type of lambing of livestock, where the type of single lambing is shorter than the type of twin lambings. Spacing is the most important character for assessing productivity and is the best index for evaluating reproductive efficiency goats in the field (Parasmawati et al., 2013).

Service per Conception

Service per conception is the mating needed to require conception. Lower service per conception means higher fertility of the goat, conversely, the

the higher value of the service per conception means the lower the value of the goat fertility. Service per conception depends on the level of buck and doe fertility, insemination time and insemination technique used (Feradis, 2010). Service per conception figures can be seen in Table 5.

Table 5. Service per conception of PE goat aged 1.5 to 3 years

Age	N	S/C (times)
Poel 2	373	1,28 + 0,65 ^{ns}
Poel 3	373	1,22 + 0,55 ^{ns}

NS=Non significant

Based on the table above, age does not affect S/C numbers. The results showed that the number of service per conception goats aged 2 and 3 were 1.28 and 1.22 times. The results of this study are lower when compared with Feradis (2010) which is 1.6 to 2.0 times, Murdjito *et al.*, (2011) service per conception of Bligon goats by 1 to 2 times and 1.59 times (Rustadi, 2008). The results of the study were lower due to the factors of the buck and the method used. The breeders in Kulon Progo Regency do mating by natural methods or use buck for mating, and most have selected bucks to be mated with does based on goat class. Goat class is obtained from the PE goat contest which is routinely held every year in Kulon Progo Regency. According to Pramono *et al.*, (2008), service per conception is influenced by several factors, namely the accuracy of detecting lust, the condition of the goat themselves and the skills and accuracy of inseminators in inseminating their goats. Added again by Feradis (2010), that service per conception depends on the level of fertility of bucks and does, insemination time and insemination techniques used. Soeharsono *et al.*, (2010), added, another factor that is no less important and influences the value of service per conception is the knowledge and skills of farmers in the detection of lust. Detection of appropriate lust and breeders' knowledge of the optimum time for insemination along with reporting at the right time will be very helpful in the success of artificial insemination activities. According to Astuti (2004), the lower the value of service per conception, the higher the level of livestock fertility and vice versa the higher the value of service per conception, the lower the level of fertility.

- Performance in Boer Goat and Crossbreed Goat Etawah (PE). Faculty of Animal Husbandry, Brawijaya University. Malang. *Journal of Animal Sciences*. 23(1):11-17.
- Pramono, A., Kustono dan H. Hartadi. 2008. Calving Interval of Dairy Cows in the Special Region of Yogyakarta in terms of Reproductive Performance. *Animal Science Bulletin*. 32 (1): 38-25.
- Rasminati dan Setyo, U. 2012. Productivity of Crossbreed Goats Etawah in Coastal Areas. Faculty of Agro-Industry, Mercu Buana University, Yogyakarta. National Seminar Proceedings FAI 2012 ISBN:978-602-18810-0-2.
- Rustadi, A. M. 2008. Performance of Doe Bligon Goat in Jogonalan District, Klaten Regency, Central Java. Undegraduated Thesis. Fakultas of Animal Science, Universitas Gadjah Mada. Yogyakarta.
- Soeharsono., R. A. Saptati, dan K. Diwyanto. 2010. Reproductive Performance of Local Beef Cows and Cattle of Artificial Insemination Results in Special Region of Yogyakarta. National Seminar on Animal Husbandry and Veterinary technology. Pp.89-99.
- Sudewo., A. T. Ari., S. Agus dan A. Susanto. 2012. Productivity of Crossbreed Goat Etawah Based on Litter Size, Kidding Type and Mortality at the Village Breeding Center of Banyumas Regency. Faculty of Animal Science, Jenderal Soedirman University. Purwokerto. Prosiding National Seminar. Sustainable Development of Rural Resources and Local Wisdom II, 27-28.
- Suranindyah, Y., T.S.M. Widi, Sumadi, N. H. Tarmawati, and U. Dwiseptha. 2009. Production Performance of Ettawah Crossbreed goat in Turi Sleman. 42 Sains Peternakan, Jogjakarta. The 1st International Seminar on Animal Industry Bogor: 11 (1): 314-318.
- Susilowati, S. 2007. Bioactivity of Insulin Like Growth Factor-I Goat Seminal Plasma Complex Against Spermatozoa Quality from Centrifugation Results. Artificial Insemination Laboratory. Faculty of Veterinary Medicine, Airlangga University. Surabaya. Berk. Penel. Hayati: 12 : 167-171.
- Sutama, I. K. 2009. Productive and Reproductive Performances of Female Etawah Crossbred Goats In Indonesia. *Wartazoa* 19 (1). Pp., 7-8.
- Tambing, S. N., M. Gazali dan B. Purwantara. 2001. Empowerment of Artificial Insemination Technology in Goats. Faculty of Veterinary Medicine, Bogor Agricultural University. *Wartazoa* 11 (1). 1-9.
- Tomaszewska, M. W., I. K. Sutarna., I. G. Putu, dan T. D. Chaniago. 1993. Goat and Sheep Production in Indonesia. Sebelas Maret University Press. Surakarta. Pp., 20-21.
- Utomo, S. 2013. The Effect of Difference in Altitude on the Results of Artificial Insemination Results in Crossbreed Goat Ettawah. Animal Husbandry Study Program, Faculty of Agro-Industry, Mercu Buana University. Yogyakarta. 11 (1): 34-42