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THE CHARACTERISTICS AND REPRODUCTIVE PERFORMANCE OF ETAWA CROSSBRED GOATS IN PALANGKA RAYA

Karakteristik dan Kinerja Reproduksi Kambing Persilangan Etawa di Palangka Raya

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Abstract

The Etawa crossbred goat is a hybrid breed developed by crossing Etawa males with local Kacang goats to enhance the productivity of the native goat population. This dual-purpose breed is esteemed for its milk and meat production. This study aimed to elucidate the characteristics and reproductive performance of Etawa crossbred goats in Palangka Raya. A survey methodology was employed, purposive sampling, with sampling locations selected based on the goats population density. Data collection comprised both primary and secondary data sources. Primary data were acquired through direct observations and interviews with the farm owners. Respondents were selected based on the following criteria: (1) a minimum of three years of goat farming experience and (2) ownership of at least five goats that had previously given birth. The findings from five Etawa crossbred goat farms in Palangka Raya City indicated that the reproductive performance of Etawa crossbred goats was generally favorable. The age at first mating was 16.8 ± 2.68 months, with a pregnancy rate of 70–80%. On four farms, all births were singletons or twins, whereas one farm recorded only twin births. The average litter size was 1.16 ± 0.03. The postpartum mating interval was 3 ± 1.22 months, and the kidding interval was 7.80 ± 2.68 months. Pre-weaning mortality ranged from 5% to 6% of kids born on each farm. These findings underscore the necessity for enhanced mating management, particularly comprehensive reproductive record-keeping, to support future selection and productivity improvements in Etawa crossbred goat herds.

Keywords: characteristics, etawa crossbred goats, performance

Abstrak

Kambing persilangan Etawa merupakan bangsa hasil persilangan antara pejantan Etawa dan kambing lokal Kacang untuk meningkatkan produktivitas populasi kambing asli. Tipe kambing dwiguna ini dikenal karena kemampuan produksinya baik untuk susu maupun daging. Penelitian ini bertujuan untuk menjelaskan karakteristik dan performa reproduksi kambing persilangan Etawa di Palangka Raya. Metode survei purposive sampling digunakan dalam penelitian ini dengan lokasi pengambilan sampel ditentukan berdasarkan kepadatan populasi

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kambing. Pengumpulan data terdiri atas data primer dan sekunder. Data primer diperoleh melalui observasi langsung dan wawancara dengan pemilik peternakan. Responden dipilih berdasarkan kriteria berikut: (1) memiliki pengalaman beternak kambing minimal tiga tahun dan (2) memiliki setidaknya lima ekor induk kambing yang telah pernah beranak. Hasil dari lima peternakan kambing persilangan Etawa di Kota Palangka Raya menunjukkan bahwa performa reproduksi kambing persilangan Etawa secara umum tergolong baik. Umur pertama kali kawin adalah 16,8 ± 2,68 bulan, dengan tingkat kebuntingan 70–80%. Pada empat peternakan, semua kelahiran menghasilkan anak Tunggal atau kembar, sedangkan satu peternakan mencatat semua kelahiran kembar. Rata-rata ukuran litter adalah 1,16 ± 0,03. Interval kawin pascaberanak adalah 3 ± 1,22 bulan, dan jarak beranak adalah 7,80 ± 2,68 bulan. Angka kematian pra-sapih berkisar antara 5% hingga 6% dari cempe yang lahir di masing-masing peternakan. Temuan ini menegaskan perlunya peningkatan manajemen perkawinan, terutama pencatatan reproduksi yang lebih lengkap, untuk mendukung seleksi dan peningkatan produktivitas kambing persilangan Etawa pada masa mendatang.

Kata kunci: karakteristik, kambing persilangan Etawa, performa

INTRODUCTION

The goat population in Indonesia is extensive and widely distributed, with the Kacang goat breed being the most prevalent, followed by other breeds, including the Etawa crossbred goat. Although there are numerous goat populations and breeds in Indonesia, they are primarily categorized into three main purposes in husbandry: meat production, milk production, and dual-purpose (Mulyono and Sarwono, 2008). By 2024, the population of Etawa crossbred goat in Indonesia surpassed 15 million, distributed across the islands of Java, Kalimantan, and Sumatra, as well as in the surrounding regions.

Goat farming offers several advantages, such as requiring minimal land and labor and demonstrating high adaptability to environmental conditions and restricted feed availability. These factors contribute to the nearly uniform distribution of livestock throughout Indonesia, particularly in the rural areas of Java. However, farmers' limited understanding of the benefits of goat farming affects the subsistence farming system, in addition to its role as a supplementary business and a form of family savings for urgent needs.

The Etawa crossbred goat is a dual-purpose breed with significant potential as a source of animal protein in terms of meat and milk production (Arief and Rahim, 2007; Widodo et al., 2012). The milk yield of Etawa crossbred goat ranges from 0.5 to 0.7 liters per head per day (Middatul, 2010; Zurriyati et al., 2011). These goats have been crossbred with local varieties to produce individuals exhibiting advantageous traits from both parent breeds (Nurgiartiningsih, 2011).

In this context, productivity refers to the capacity of goats to generate output within a specified timeframe, including the number of offspring produced per litter (head/birth/year) (Sarwono, 2007; Tiesnamurti et al., 2003). According to Mahmilia (2007), the survival rate of offspring tends to decline as the number of offspring increases, with the survival rate for one to two offspring being higher than that for triplets. Additionally, the pre-weaning mortality rate tends to increase with an increase in the number of kids per litter (Budiarsana & Sutama, 2001).

Reproduction is a biological process that initiates with the fusion of an egg cell and a sperm cell, resulting in the formation of a zygote, and culminates in pregnancy and subsequent birth. In goats, the number of offspring per birth can exceed one, the interval between successive births is relatively brief, and they exhibit rapid growth when provided with an optimal environment. The natural growth of a population is significantly influenced by livestock

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reproductive performance. This performance is evaluated through several parameters, including age at first mating, calving interval, litter size, mortality, and the reproductive rate of the dam (Sodiq, 2012).

The age at first calving is closely associated with the age at first mating, which is contingent upon the condition of the livestock and their nutritional intake (Chaniago 2003). The interbirth interval, defined as the duration between two consecutive births, is a critical metric for assessing the growth rate of a livestock population in a specific locale. This calving interval is crucial for enhancing reproductive efficiency, as the productivity of the dam can be gauged by the number of calves born annually or within a given time frame (Gunawan, 2002).

To enhance livestock populations, it is imperative to focus on reproductive performance factors alongside other supportive elements. Reproductive performance significantly influences population growth and livestock productivity within a region. However, data on the reproductive performance of Etawa crossbred goats are limited, particularly in Palangka Raya City. This study aimed to elucidate the characteristics and reproductive performance of Etawa crossbred goats across various goat farms in Palangka Raya City.

RESEARCH METHOD

Animal testing ethics

This study did not require ethical approval because it did not involve the use of live animals or animal testing.

Research Implementation

The study was conducted from August to October 2025. The research was carried out at five goat farms in Palangka Raya City, namely the Denok Road, Mangku Raya Road, Tabat Kalsa Road, Petuk Ketimpun Road, and Cilik Riwut Km 29 Road farms.

Research Object

The materials and tools used in this research were 199 Etawa crossbred goat, five respondents/farmers who met the data collection criteria, a camera as a documentation tool, a questionnaire/list of questions, and writing instruments.

Research Design

This study used a survey method with purposive sampling to determine the sampling location, considering the largest number of Etawa crossbred goat owned by each farm. The data collected included primary and secondary data. Primary data were obtained directly through observation and direct interviews with farm owners. The selected respondents/farmers met the criteria, including having at least three years of experience in goat husbandry. Each farm had at least five Etawa crossbred goats that had given birth. Secondary data are obtained from the literature related to the research.

Research Variables

The research variables included population structure and reproductive potential, consisting of age at first mating (years), pregnancy rate (%), type of birth (single, twins, or triplets (%), birth rate/litter size, calving interval, postpartum mating, and pre-weaning mortality (%).

Data analysis

The research data were analyzed using exploratory descriptive statistics to determine the means and standard deviations of the observed variables. The data analysis used, according to Sudjana (2002), was descriptive analysis by calculating the means and standard deviations.

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RESULTS AND DISCUSSION

The potential for the development of local goat populations in rural areas must be comprehensively understood to accurately estimate population growth. This understanding will provide critical insights into population dynamics and inform future goat development programs (Sukendar et al., 2005). Etawa crossbred goat, known for their dual-purpose utility in milk and meat production, possess superior genetic potential. Consequently, these goats are extensively utilized in various countries, including Indonesia, to enhance the genetic quality of indigenous Indonesian goats, such as Kacang goats, through crossbreeding with Etawa crossbred goat (Yulianto, 2012). Etawa crossbred goats have been crossbred with several local goat breeds to produce local dairy breeds. Notable breeds resulting from Etawa crossbreeding in Indonesia include the Etawa crossbred goat, Senduro, Jawa Randu (Bligon), and Sapera goats (Syamsi et al., 2023).

Research conducted on five Etawa crossbred goat farms in Palangka Raya City revealed that the reproductive performance of Etawa crossbred goats is commendable. Table 1 presents the data obtained in this study, including the age at first mating (16.8 ± 2.68 months) and pregnancy rate (70-80) %. In four farms, the birth type was exclusively single births, whereas one farm reported 50% twin births. The average number of offspring per birth was 1.16 ± 0.03. The postpartum mating period was 3 ± 1.22 months, and the calving interval was 7.80 ± 2.68 months. The pre-weaning mortality rate was 5-6% of the number of female goats that gave birth on each farm.

The age at first mating of Etawah goats was 16.8 ± 2.68 months. This finding exceeds the results reported by Sukendar (2004), who documented the age at first mating for goats as 7.50 ± 2.50 months, and Atabany (2001), who reported the age at first mating for female goats at Barokah Farm as 403.32 days (13.44 months). The regulation of the age at first mating in female livestock is intended to sustain their productivity. It is advisable that livestock approach physical maturity before mating. This management strategy is implemented to optimize the pregnancy rate in goats post-mating. According to Budi (2005), inappropriate mating timing can result in pregnancy failure.

The breeding system for Etawah goats across the five farms involved natural mating, with each farm maintaining 4-5 males. Each female goat exhibiting signs of estrus is paired with a male for a duration of 2-3 months at a sex ratio of 1:4. Upon indication of pregnancy, the female goat is promptly relocated to a pregnancy pen (individual pen) to facilitate management, including feeding, which necessitates additional nutrition during pregnancy and parturition. The pregnancy rate achieved is 80-85%, indicating a high success rate for the natural mating system. This aligns with Utomo (2011), who asserted that natural mating generally achieves a success rate of nearly 100%. The natural mating system demonstrates a higher pregnancy rate than artificial insemination, as the female is prepared to accept mating (corresponding to the peak of estrus), allowing for multiple matings to ensure pregnancy (Utomo 2011).

Postpartum estrus is a critical determinant of reproductive efficiency in goats (Capra hircus). A shorter interval between the initial estrus following parturition and the subsequent kidding interval is advantageous for the herd. The findings indicate that postpartum estrus in Etawa crossbred goats reared on five farms in Palangka Raya occurs at approximately 3 ± 1.22 months. Postpartum estrus is influenced by several factors, including lactation duration. Lactating females experience a longer duration before the onset of estrus than non-lactating females. Furthermore, during lactation, ovarian activity and estrus may not be observable for 2–3 months, particularly when energy intake is insufficient. Typically, normal postpartum estrus is observed between 50 and 60 days postpartum (Murdjito et al., 2011).

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The calving interval, defined as the duration between successive births, serves as a critical metric for assessing productivity and is considered the most reliable indicator of reproductive efficiency within livestock populations (Parasmawati et al., 2013). The findings of this study indicate that the average calving interval for Etawa crossbred goats was 7.80 ± 2.68 months. This observation aligns with Garantjang (2004), who reported that the typical calving interval for goats ranges from 8–10 months. Furthermore, Sodiq and Sumaryadi (2002) determined the average calving interval for Etawa crossbred goats to be 320 days. According to Lestari (2009), most goats require approximately three months to conceive again, suggesting that the standard calving interval for goats is eight months (240 d). The length of the calving interval is influenced by several factors, including the interval between the first estrus and conception, duration of gestation, mating failures, embryonic mortality, and length of the postpartum anestrous period.

Data on the average litter size of Etawa crossbred goats (1.16 ± 0.03) were obtained from five farms in Palangka Raya City. The findings of this study are lower than those of previous studies. Kurniasih et al. (2013) documented that the litter sizes of Etawa crossbred goats in the Cimalaka and Paseh subdistricts were (2.13±0.5) and (1.75±0.62), respectively. These results suggest that the goat breeds in the Cimalaka and Paseh subdistricts exhibit relatively higher productivity than those in Palangka Raya City. According to Adhianto et al. (2012), litter size is influenced by several factors, including the age of the female livestock, the influence of males, seasonal variations, nutritional quality of feed, body weight, and type of birth (single or twin). A higher offspring litter size correlates with an increased number of lambs harvested (Ajat et al., 2024). Additionally, litter size is affected by housing type, with group housing resulting in larger litter sizes than individual housing (Aka, 2008).

As noted by Mutaqqin (2017), the initial 0-3 days post-birth represent a critical period for goat kids. It is imperative to ensure that children receive colostrum from their mothers, which serves as a vital source of immunity. The mortality rate among pre-weaned kids can vary; however, a rate of 5-10% is considered highly favorable. The study's findings indicated that the mortality rate of kids prior to weaning across the five farms was 5-6% of the total number of female goats that gave birth on each farm. This rate is deemed very good, especially when compared to the previous research by Setiawan et al. (2023), who reported a mortality rate of 15.70%. Heluth et al. (2021) identified several factors contributing to pre-weaning mortality, including birthing difficulties, climatic conditions, litter size, disease, and predation. Atmoko et al. (2018) documented a pre-weaning mortality rate of 17.39% for Etawa crossbred goats. Variations in goat-kid mortality rates are influenced by multiple factors, such as birthing difficulties, maternal age, maternal temperament, number of offspring, birth weight, climate, and rearing practices (Budisatria et al., 2018). A reduction in pre-weaning mortality enhances kid harvest rates, with lower mortality observed in group pens than in individual pens (Aka, 2008).

CONCLUSION AND RECOMMENDATIONS

Conclusion

The reproductive performance of Etawa crossbred goats across five farms in Palangka Raya City was generally good. The age at first mating averaged 16.8 ± 2.68 months, with a pregnancy rate ranging from 70%–80%. On four farms, all births were singletons or twins, whereas one farm recorded only twin births. The mean litter size was 1.16 ± 0.03. The intervals between postpartum mating and calving were 3 ± 1.22 months and 7.80 ± 2.68 months, respectively. Pre-weaning mortality was observed to be between 5% and 6% of the total number of kids born on each farm.

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Recommendations

It is imperative to implement a breeding management system for Etawa crossbred goats, which should include training in reproductive record-keeping, enhancing nutrition during pregnancy and lactation, selecting highly productive dams, scheduling breeding management, and utilizing superior bucks with comprehensive pedigree records. This study aimed to enhance the productivity of Etawa crossbred goats in Palangka Raya City by improving the livestock reproduction records.

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Table

Table 1. Reproduction Data of Etawa Crossbred Goats Research Results

Research Parameters	Farm 1	Farm 2	Farm 3	Farm 4	Farm 5
Age at First Mating of Female Livestock (years)	1,5	1,5 – 2	1	1,5	1 – 1,5
Pregnancy Rate (%)	0,25	0,27	0,22	0,23	0,25
Birth Type (single, twins, triplets)	Single (90%) Twins (10%)	Single (50%) Twins (50%)	Single (35,72%) Twins (64,28%)	Twins (100%)	Single (69,23%) Twins (30,77%)
Birth Rate/Liter Size	1	1,3	1,27	1,15	1,06
Sex Ratio (Male:Female)	1:5	1:4	1:3	2:1	3:2
Interval (month)	3-4	9	6	10	10
Postpartum mating (month)	3-4	3	3-4	3	1
Pre-Weaning Mortality Rate (%)	0,5	0,006	0, 004	0	1,17