PROFIL DOMBA LOKAL DI PULAU JAWA DITINJAU DARI KARAKTERISTIK FENOTIPIK DAN GENETIK SERTA PERANANNYA DI MASYARAKAT

INTISARI

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Domba lokal Indonesia merupakan salah satu ternak lokal yang mempunyai sebaran asli geografis di wilayah Indonesia dan telah dibudidayakan secara turun-temurun. Penelitian ini dilakukan untuk mengkaji profil domba lokal di Pulau Jawa yang ditinjau berdasarkan karakteristik fenotipik dan genetik, serta peranannya di masyarakat. Penelitian dilakukan dari Bulan Juni 2018 – Maret 2021. Materi utama yang digunakan adalah domba Priangan, Garut, Batur, Wonosobo, Jawa Ekor Tipis (JET), Jawa Ekor Gemuk (JEG), dan Sapudi, serta peternak dan pelaku usaha ternak domba yang ada di Kabupaten Indramayu, Garut, Banjarnegara, Wonosobo, Sleman, Bantul, Pasuruan, dan Jember. Kajian karakteristik fenotipik dilakukan dengan mengamati karakter eksterior dan ukuran tubuh domba. Kajian karakteristik genetik dilakukan dengan penelusuran profil DNA berdasarkan sekuen Cyt b, D-loop, SRY, dan mikrosatelit SRYM18. Kajian peran domba di masyarakat dilakukan dengan mengkaji peranan domba pada periode Idul Adha dan kontes ternak. Data karakteristik eksterior tubuh dianalisis dengan analisis deskriptif, analisis korespondensi berganda, dan analisis klaster hierarkhi. Data kuantitatif ukuran tubuh dianalisis dengan analisis deskriptif, analisis komparasi, dan analisis diskriminan. Sekuen gen Cyt b, D-loop, SRY, dan mikrosatelit SRYM18 dianalisis keragaman genetik, jarak genetik, dan kekerabatannya melalui pohon filogenetik. Data peran domba di masyarakat dianalisis dengan analisis deskriptif kualitatif dan kuantitatif. Hasil dari penelitian ini bahwa secara fenotipik, terdapat hubungan yang dekat antara domba JEG dengan Sapudi dan antara domba Batur dengan Wonosobo, sedangkan domba Garut mempunyai kekerabatan yang cukup jauh dengan breed domba lainnya. Secara maternal, domba Garut dan Priangan sebagian besar terbagi ke haplogroup A sedangkan domba lainnya ke haplogroup B. Secara paternal, terdapat dua variasi SNP SRY (g.88 A>G) dan alel SRYM18 (143 dan 145 bp), kombinasi keduanya menghasilkan tiga haplotipe, yaitu haplotipe 4 (37,77%), 5 (26,67%), dan 6 (62,22%). Domba Batur dan Wonosobo secara genetik dekat dengan domba tipe Eropa/Autralia, domba Garut dan Priangan dengan dengan domba tipe Asia, dan domba JET, JEG, serta Sapudi dekat dengan domba tipe Asia Tengah/Afrika, namun tidak ada karakter unik untuk membedakan tujuh breed domba lokal tersebut. Domba mempunyai peran di dalam kehidupan masyarakat di Pulau Jawa dari segi sosial-ekonomi, budaya, dan keagamaan. Disimpulkan bahwa tujuh breed domba lokal di Pulau Jawa memiliki hubungan yang cukup dekat. Karakteristik fenotipik dapat digunakan untuk mengklasifikasi breed domba lokal dan karakteristik genetik dapat digunakan untuk merunut asal-usulnya. Domba dan karakteristiknya mempunyai peranan penting di masyarakat.

Kata kunci: Domba lokal, karakteristik fenotip, karakteristik genetik, peran domba

THE PROFILE OF LOCAL SHEEP IN JAVA ISLAND BASED ON PHENOTYPIC AND GENETIC CHARACTERISTICS AND THEIR ROLE IN THE COMMUNITY

ABSTRACT

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Indonesian local sheep is one of the local livestock with an original geographical distribution in Indonesia's territory and has been cultivated for generations. This study was conducted to examine the profile of local sheep in Java Island based on phenotypic and genetic characteristics and their role in the community. The study was conducted from June 2018 – March 2021. The main materials used are Priangan, Garut, Batur, Wonosobo, Javanese Thin-Tailed, Javanese Fat-Tailed, and Sapudi sheep, as well as farmers and business actors of sheep in Indramayu, Garut, Banjarnegara, Wonosobo, Sleman, Bantul, Pasuruan, and Jember Regency. The study of phenotypic characteristics was carried out by observing the sheep's exterior characters and body measurements. The study of genetic characteristics was carried out by tracing the DNA profile based on the Cyt b, D-loop, SRY, and SRYM18 microsatellite sequences. The study of the role of sheep in the community was carried out by examining the role of sheep during the Eid al-Adha period and livestock contests. The data of the exterior body characteristics were analyzed by descriptive analysis, multiple correspondence analysis, and hierarchical cluster analysis. Quantitative body measurement data were analyzed by descriptive analysis, comparative analysis, and discriminant analysis. Cyt b, D-loop, SRY, and SRYM18 sequences were analyzed for genetic diversity, genetic distance, and relationship through phylogenetic trees. Data on the role of sheep in the community were analyzed by qualitative and quantitative descriptive analysis. This study shows that phenotypically, there is a close relationship between JEG and Sapudi sheep and between Batur and Wonosobo sheep. In contrast, Garut sheep have a distant relationship with other sheep breeds. Maternally, Garut and Priangan sheep mainly were divided into haplogroup A while the other sheep belonged to haplogroup B. Paternally, there were two variations of SRY SNP (g.88 A>G) and SRYM18 allele (143 and 145 bp), the combination of the two resulted in three haplotypes, namely haplotype 4 (37.77%), 5 (26.67%), and 6 (62.22%). The Batur and Wonosobo sheep are genetically close to the European/Australian-type sheep, the Garut and Priangan sheep to the Asian-type sheep, and the JET, JEG, and Sapudi sheep are close to the Central Asian/African-type sheep. Still, there are no unique characters to distinguish the seven breeds of the local sheep. Sheep have a role in the community lives on Java Island based on the socio-economic, cultural, and religion. It concluded that the seven local sheep breeds in Java Island had a close relationship. Can use phenotypic characteristics to classify local sheep breeds and can use genetic characteristics to trace their origin. Furthermore, sheep and their characteristics have a vital role in the community.

Keywords: local sheep, phenotypic characteristics, genetic characteristics, the role of sheep