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Characterization of Number of Crow and Qualitative Marker of Kokok Balenggek Song Fowl Inside a Captive Breeding Farm in Solok Regency, West Sumatera Province, Indonesia Rusfidra, Y.Y. Tumatra, M.H. Abbas, Y. Heryandi and F. Arlina Faculty of Animal Science, Andalas University, Kampus Limau Manis, Padang- 25163, West Sumatera-Indonesia
Abstract: Kokok Balenggek chicken is a poultry genetic resource from West Sumatera Province, Indonesia, well-known as song fowl for Minang Kabau tribes. This study was conducted in "Agutalok" Captive Breeding Farm in Solok Regency, West Sumatera Indonesia to characterize local chickens based on qualitative traits. This research was aimed to collect basic data of qualitative marker on Kokok Balenggek song fowl. Twenty one adult male of Kokok Balenggek chickens were sampled for this study. Traits studied were number of crow, feather morphology, plumage colour, skin colour, shank colour, comb type, comb colour, earlobes and wattles. The results showed that the number of crows was ranging 5-11 crows. The qualitative traits on Kokok Balenggek chicken were Taduang (4.76%), Jalak (9.52%), Kinantan (9.52%), Kinangkeh (9.52%), Sipatuang rimbo (4.76%), Kuriak padi masak (4.76%), Biriang kalek (23.81 %), Biriang pucek (14.29%), Biriang kuniang (19.05%). Overall, normal feather cover was the main

plumage characteristics of Kokok Balenggek chicken populations in the study area. Yellow shanks were dominantly most frequent, followed by black shanks. All chickens studied had earlobes and had wattles. Further studies involving morphometric, production and molecular analyses are important for exhaustive characterization. Key words: Kokok balenggek chicken, song fowl, qualitative traits, solok regency-Indonesia INTRODUCTION Indonesia had about 270 million Local chickens by the year 2011/2012 which provide poultry meat and poultry eggs in the rural areas. The Indonesian local chicken population exhibits variation in numerous observable attributes including plumage colour, skin colour, comb type and other qualitative traits. Phenotypic characterization is an initial step in the process of complete characterization of a population. The present study was aimed at describing the qualitative traits of Kokok Balenggek chickens in Solok Regency, West Sumatera Province, Indonesia. The information to be gained in the study would be helpful especially in planning future breeding program and conservation strategies of prospective local chicken ecotypes. Kokok Balenggek chicken is a genetic resource from West Sumatra Province, Indonesia, well-known as song fowl which has high economic commodity for Minang Kabau peoples (Rusfidra, 2004; Rusfidra et al., 2010; Rusfidra et al., 2012; Fumihito et al., 1996). Indonesia Ministry of Agriculture (2011) stated in their regulation about national genetic resources in Indonesia that Kokok Balenggek chicken was one of the national genetic resources in Indonesia. MATERIALS AND METHODS Study area: The study was conducted in "Agutalok" Captive Breeding Farm in Solok Regency, about 40 km from Padang city, the capital of West Sumatera Province, Indonesia. Data collection: Data were collected on 21 mature of male Kokok Balenggek chickens. Chickens were individually observed for various phenotypic attributes including number of crow, plumage characteristics and colour, shank colour, earlobe colour, comb type, comb colour, earlobes and wattles attributes as described by FAO (2012). Data analysis: Data were analyzed using frequency procedure of SAS (SAS, 2003) to compute frequencies of occurrence of each qualitative trait. RESULTS AND DISCUSSION Characteristic of Crows: The results showed that the number of crows was ranging 5-11 crows or 6.57 crows in average and 8-14 syllables. The crow was produced only by males for two reasons; to proclaim to other males about their territory and to attract females to mate with them. The crow divided into three segments: first, middle and last segment. The frequency of crowing was Corresponding Author: Rusfidra, Faculty of Animal Science, Andalas University, Kampus Limau Manis, Padang- 25163, West Sumatera, Indonesia 343 Fig. 1: Kokok Balenggek Chicken Jalak Fig. 3: Kokok Balenggek Chicken Kinantan Fig. 2: Kokok Balenggek Chicken Red Biriang 8.08 times per 10 minutes in average. The peak of crowing activity happened in the morning time with frequency of 9.59 times per 10 minutes. The duration of a crow varied from 2.08 to 4.43 seconds (Rusfidra, 2004). Plumage cover characteristics: Normal feather cover was the main plumage characteristics of Kokok Balenggek chicken populations in the study area (100.0%). Plumage colour: Overall, Biriang colour plumages appeared most frequently (57.16%) followed by Kinantan (19.04%), Jalak (9.52%), Taduang (4.70%), Kuriak padi masak (4.70%) and Sipatuang Rimbo (4.70%). The occurrence of several plumage colours observed in the local chicken population in the current study might be the result of uncontrolled breeding of chickens in

the rural Fig. 4: Kokok Balenggek Chicken Taduang areas since random mating is a typical breeding practice under free range management system. Plumage colour on Kokok Balenggek chicken presented in Table 1 and Fig. 1-6. Skin colour: All skin colour of Kokok Balenggek chickens in the studied population was yellow (100.0%). According to Smyth (1990), the yellow skin of the chicken is the result of carotenoid pigments (xanthophylls) which are consumed through feeds and deposited under the skin. Even if chickens are exposed to diets containing carotenoids some birds may genetically be unable to deposit the pigment under the skin. Eye colour: In this study orange eye colour was appeared to all object studied (100.0%). The orange appearance of the eyes could be due to lack of colour pigment in the eyes and hence what is seen could be Fig. 5: Kokok Balenggek Chicken Kuriak Padi Masak Fig. 6: Kokok Balenggek Chicken Balang due to blood circulating the blood vessels of the eye. Eye colour to a large extent depends on the pigmentation (carotenoid pigments and blood supply) of a number of structures within the eye (Crawford, 1990). Shank colour: Various shank colours were observed in the current study. Overall, yellow shanks were most frequent (100.0%). The observed dominant occurrence of yellow shanks in the current study was similar to that reported by other researchers (Cabarles et al., 2012; Daikwo et al., 2011). The occurrence of various types of shank colours in this study might have been due to combinations of pigment controlling genes responsible for colour determination. Wattles and earlobes: Almost all (100.0%) chickens had wattles. All chickens had earlobes. The chickens Table 1: Plumage colour of Kokok Balenggek chicken in "Agutalok" Name of Kokok Amount Frequently Balenggek (head) (%) Taduang 1 4.76 Jalak 2 9.52 Yellow biriang 4 19.05 Biriang pucek 3 14.29 Biriang kalek 5 23.82 Kinantan 2 9.52 Kinangkeh 2 9.52 Sipatuang rimbo 1 4.76 Kuriak padi masak 1 4.76 Total 21 100% had white-patched red earlobes (100.0%). Variations in earlobe colour among local chickens have been reported from other studies (Cabarles et al., 2012; Egahi et al., 2010; Iqbal and Pampori, 2008). The variation in earlobe colour of local chickens observed in the current study might be of genetic origin since earlobe colour is dependent upon several genetic factors. Warren (1928) concluded that breeds or individuals having the same earlobe colour may differ considerably in genetic constitution with respect to earlobe colour loci. Comb type and colour: Various comb types were observed in the current study. Single comb was the most common (100.0%) comb type. Other comb types (rose, cushion, pea and double combs) appeared not found of Kokok Balenggek chicken. Other research findings (Cabarles et al., 2012; Egahi et al., 2010; El-Safty, 2012) reported also the predominant occurrence of single combs in local chicken populations. Crowford (1990) has contended that the heredity of comb type in chickens is attributed to two autosomal pairs of genes (RR for Rose type and PP for Pea type). Overall, all chickens (100.0%) had red combs. Similar results on occurrence of red combs were reported by Faruque et al. (2010) from Bangladesh. Conclusion: Kokok Balenggek chickens in Agutalok breeding farm had 6,57 crows. On the basis of qualitative characteristics observed in the current study, Kokok Balenggek chickens had various plumage colours. Biriang plumage color of Kokok Balenggek was dominant (57,16%). Kokok Balenggek chicken populations studied in this study are unique. However, because of the limited documented information available in the current study, further

studies involving morphometric, production and molecular analyses are important to observe for exhaustive characterization. Such information will form a basis for conservation, selection and sustainable improvement strategies for the identified prospective Kokok Balenggek chickens. ACKNOWLEDGEMENTS Financial support in conducting research in "Research Competitive Grant (Riset Hibah Bersaing period 2009- 2010)" from the Directorate of Higher Education, Indonesia Ministry of Education and Culture is highly appreciated in this study. Special thanks to the owner of "Agutalok" breeding farm who gave full efforts in supporting this research and for providing his chickens used in this study. REFERENCES Cabarles, Jr J.C., A.L. Lambio, S.A. Vega, S.S. Capitan and M.S. Mendioro, 2012. Distinct morphological features of traditional chickens (Gallus gallus domesticus L.) in Western Visayas, Philippines. Anim. Genetic Res., 51: 73-87. Crawford, R.D., 1990. Poultry Breeding and Genetics. Elsevier, Amsterdam. Daikwo, I.S., A.A. Okpe and J.O. Ocheja, 2011. Phenotypic Characterization of Local Chickens in Dekina. Int. J. Poult. Sci., 10: 444-447. Egahi, J.O., N.I. Dim, O.M. Momoh and D.S. Gwaza, 2010. Variations in Qualitative Traits in the Nigerian Local Chicken. Int. J. Poult. Sci., 9: 978-979. El-Safty, S.A., 2012. Determination of Some Quantitative and Qualitative Traits in Libyan Native Fowls. Egypt Poult. Sci., 32: 247-258. FAO, 2012. Phenotypic characterization of animal genetic resources. FAO Animal Production and Health Guidelines No. 11. Rome http://www.fao.o rg/docrep/015/i2686e/i2686e00.pdf Faruque, S., N.U. Siddiquee, M.A. Afroz and M.S. Islam, 2010. Phenotypic characterization of Native Chicken reared under intensive management system. J. Bangladesh Agri. Univ., 8: 79-82. Fumihito, T. Miyake, M. Takada, R. Shingu, M.T. Endo, T. Gojo Baru, N. Kondo and S. Ohno, 1996. Monophyletic origin and one subspecies of the red jungle fowl (Gallus gallus gallus) dispersal patten of domestic fowl. Proc. Nat. Acad Sci., 93: 6792-679. Iqbal, S. and Z.A. Pampori, 2008. Production potential and qualitative traits of indigenous chicken of Kashmir. Volume 20, Article #182 Retrieved January 22, 2013 from http://www.lrrd.org /lrrd20/11 /iqba20182.htm. Indonesia Ministry of Agriculture, 2011. S.K. Menteri Pertanian No.: 2919/Kpts/OT.140/6/2011 about Kokok Balenggek Chicken as The National Animal Genetic Resources. Rusfidra, M.H. Abbas, Y. Heryandi and F. Arlina, 2010. Conservation of Kokok Balenggek chickens with genetic characterization, bioacoustics assessment and reproduction biotechnology application. Research Report on Research Competitive Grant. Rusfidra, Y.Y. Tumatra, M.H. Abbas, Y. Heryandi and F. Arlina, 2012. Identification of biacoustics marker of Kokok Balenggek song fowl inside a captive breeding farm in "Agutalok" Solok Regency, Indonesia. J. Peternakan Indonesia, 14: 303-307. SAS, 2003. SAS User's Guides Version 9.1.3 for Windows, SAS Institute Inc., Cary, NC. Smyth, J., 1990. Genetics of plumage, skin and eye pigmentation in chicken. In: Crowford, R, editor Poultry Breeding and Genetics, pp: 109-167. Amsterdam, Netherlands: Elsevier Science Publishers. Warren, D.C., 1928. Inheritance of earlobe colour in poultry. www.genetics.org/content/13/6/470.full.pdf Int. J. Poult. Sci., 13 (6): 343-346, 2014 Int. J. Poult. Sci., 13 (6): 343-346, 2014 Int. J. Poult. Sci., 13 (6): 343-346, 2014 344 345 346