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Estimation of Breeding Value of FH Dairy Cattle Milk Production in BBPTU-HPT Baturraden

Maria Tarsisia Luju*, Luqman Hakim**, Sucik Maylinda***

*(Faculty of Animal Husbandry, Brawijaya University, Malang, Indonesia
Email: mariatarsisialuju@gmail.com)

**(Faculty of Animal Husbandry, Brawijaya University, Malang, Indonesia)

***(Faculty of Animal Husbandry, Brawijaya University, Malang, Indonesia)

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Abstract:

The purpose of this study was to determine the genetic potential of the nature of milk production from 100 FH dairy cattle in BBPTU-HPT Baturraden. The material used in this study was 100 FH dairy cattle that had a record of milk production in the first lactation period. The method was a case study. The result of this study indicated that the breeding value of milk production from 100 FH dairy cattle was 4,323 kg and 43% of the 100 dairy cattle had a good genetic potential for milk production and were above the population average value. Therefore, FH female dairy cattle could be used as a prospective cow for the next generation.

Keywords --- **breeding value, FH female dairy cattle**

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Introduction

Dairy cattle are one of the livestock commodities that have an important role in efforts to meet national milk needs. One factor that has economic value in the maintenance of dairy cattle is milk production. If milk production is good, national milk demand can be achieved without milk import activities. Therefore, we need to know how the genetic potential of livestock, especially dairy herds that can directly produce milk. One of the genetic potentials of livestock can be identified through the calculation of the value of breeding milk production. The breeding value can then be used to determine which animal has a good genetic potential and can be used as a prospective parent for the next generation.

Literature review

Fries Holland or FH dairy cattle come from North Holland Province and West Friesland Province. This cow in the United States is called Holstein Friesian or abbreviated as Holstein and in Europe, it is called Friesian (Sudono, et al., 2003). FH cows have the characteristics of black and white stripes, whitetails, the size of short horns facing forward, mostly on the forehead there are white triangles that are triangular and have benign characteristics so that they are easy to master and have good adaptability to conditions environment (Mulyana, 2006).

FH dairy cattle milk production is higher when compared to other dairy cattle nations. The highest FH dairy cattle milk production is obtained in the fourth lactation

period (Lingathurai and Vellathurai, 2009). Total milk production in each lactation period varies, but in general, the peak of production is reached when animals are 6-7 years old, or in the 3rd and 4th lactation periods (Miller et al. 2002). Starting from the first lactation, milk production will increase until adult age. As cattle age, it will cause a slow decline in production (Praharani, 2009). According to Tyler and Ensminger (2006), milk production in the first lactation is 70%, the second lactation is 80%, the third lactation is 90% and the fourth lactation is 95% of milk production in adulthood with a 12-month interval and the age of livestock during first birth is two years.

Breeding value illustrates the genetic potential of livestock for a trait compared to the average population where the animal is located. The value of breeding provides a illustrate of the alleged ability to inherit traits (Kurnianto, 2009). Estimation of the breeding value of dairy cattle can be done by observing their production records and can be added to the production records of their relatives. A parent that has a high breeding value (above the population average) is expected to produce offspring with production characteristics that are as good or better than the parent production, especially if it is mated with superior males.

Research Conceptual Framework

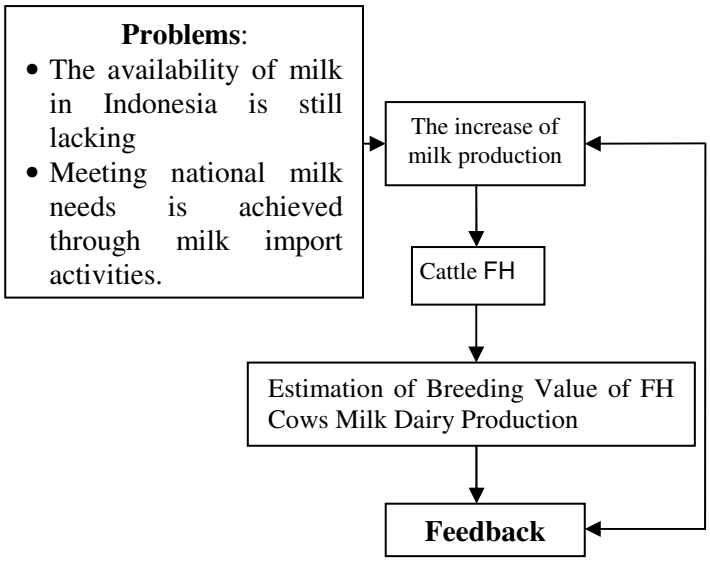

Figure 1. Research Conceptual Framework

Hypothesis

It was assumed that the estimation of breeding value of milk production could be used as a basis for selection to determine the genetic potential of livestock.

Research method

The research method of this study was a case study using 100 FH female dairy cattle that had a milk production record of the first lactation period.

Data analysis

The data used in this study were data on milk production of dairy cattle in the first lactation period and analyzed with the formula for calculating breeding values.

Research result

PBV (Predicted Breeding Value) or estimation of breeding value is one way that can be used to evaluate the genetic quality of livestock in producing milk. Livestock with the best breeding value is expected to pass on genes to their offspring so that their

offspring have good production abilities. The average PBV value of 100 FH female cattle was presented in Appendix 8. was 4,323 kg. The result of the estimation of the breeding value also showed that 43% of the observed cattle were above the average value, while the rest were below the average value.

Cattle that had the highest breeding value were cattle with an identity number 4510, amounting to 4843,183 kg. These cattle were thought to have a genetic advantage in milk production of 4843,183 kg. The result of this estimation showed that cattle with an identity number 4510 had a genetic advantage in milk production 519.72 kg higher than the average value of milk production from other cattle observed in this study. It showed that livestock that had high breeding value illustrates the high genetic ability of these animals to produce. According to Anggraeni (2003), the value of breeding provides a picture of the alleged ability to inherit traits.

Estimation of breeding value was generally used to make a selection of the parent that would produce seedlings and for replacement stock. Usually, the livestock used as breeds were the best 10% of all selected cattle in the population (Directorate General of Animal Husbandry, 2012). Estimation of the breeding value of 10% of the best cattle observed in this study can be seen in Table 5. Replacement stock was intended to replace the existing parent so that milk production can continue. Cattle that had a high breeding value should be used as broodstock for the next generation. Cattle that had a greater breeding value than others would be better if they were used as parents when compared to cattle that had a low breeding value (Subandriyo, 1994). Ranking of cattle based on breeding value was expected to be able to facilitate the selection process of livestock that would be made as a parent, therefore, the genetic potential of the offspring was able to match or even better than the parent.

Conclusion and recommendation

Conclusion

Based on the result of the study, it can be concluded that 43% of the FH dairy cattle used in this study have breeding values above the average population. It means that 43% of dairy cattle have better genetic potential than other dairy cattle in the population.

Suggestion

The breeding value of milk production can be used as a basis for selection to choose which livestock are suitable for further breeding and to be used as potential brooders for the next generation.

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