

Qualitative performance of participated cow for progeny test on smallholder dairy farms

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Abstract. Dairy cow health status affects to milk production and contributes to the profit in many types of dairy management. Locomotion score has been used to determine the qualitative performance score of dairy cows. Investigations on dairy cow located in Wagir Malang were obtained to assess the qualitative performance of participated cow. Selecting participated cow to assure the potential of superior bull from his pedigree in progeny test. There were 85 dairy cows belongs to the smallholder dairy farmer contributed to this research. The result showed that Chest Width 20.99 ± 2.63 cm; Body Depth 79.58 ± 4.79 cm; Rump Angle $-2.59 \pm 2.43^\circ$; Thurl Width 16.46 ± 1.71 cm; Rear Leg Side View $146.82 \pm 6.08^\circ$; Rear Leg Rear View $15.96 \pm 4.19^\circ$; Font Foot Angle $42.94 \pm 4.81^\circ$ and Rear Foot Angle $40.12 \pm 5.09^\circ$. It can be concluded that the qualitative performance of participated cow shows moderate performance based on the standard performance of FH. It is necessary to select the participated cow to improve milk yield of its pedigree and qualitative performance score can be used as the basis of breeding program.

1 Introduction

Dairy cattle in Indonesia, primarily raised by smallholder farmers, belong to the Friesian Holstein (FH) breed and its descendants, with the aim of obtaining milk production. Milk production is a result of the interaction between genetic and environmental factors. To achieve optimal milk production, one approach is to improve genetic quality, intending to enhance the genetic makeup of the population in subsequent generations through a directed selection program. Selection is not limited to males with a progeny test program but should also be conducted on participated female cows.

The performance of participated cows used in progeny tests varies widely. Therefore, conducting proper evaluations of participated cows is an effective way to improve the genetic quality and milk production of dairy cows. Performance assessment can be carried out based

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on two characteristics: quantitative and qualitative performance. Quantitative performance includes vital statistics of the cow and milk production, while qualitative performance encompasses angularity, rump angle, side-view foot positioning, and rear-view foot positioning.

According to Chemuniqué [1], qualitative performance is crucial for selecting dairy cow dams because animal comfort is a factor influencing decreased milk production, feed consumption, animal weight loss, and increased reproductive failure and mastitis. The research of Zhang et al. [2] found that rump angle significantly influences milk production in dairy buffaloes. Qualitative performance assessment can be conducted based on the National Holstein Friesian Association standards [3].

The objective of this research is to analyze the quality of qualitative performance of participated cows used as dams in the progeny testing program in the Wagir District of Malang Regency.

2 Materials and methods

2.1 Data information

Eighty-five dairy cows in their lactation period were used in this research and selected as participated cows for the progeny testing program of the Livestock Department in 2023. These dairy cows are owned by smallholder farmers in the Wagir District of Malang Regency, Indonesia. The research method is a survey. The observed variables and their measurement methods are presented in Table 1.

2.2 Statistical Analysis

The data obtained was analyzed descriptively and the results were compared with guidelines from the National Holstein Friesian to determine the performance of participated cows.

3 Results and Discussion

The descriptive statistics of type traits on participated cows were presented in Table 2. Qualitative performance is crucial for participated cows because it is linked to the health status of the livestock. The observation results indicate that all participated cows fall into the intermediate or moderate category. Chest width is associated with the ability of cows to consume feed. In the research, the chest width of participated cows was found to be consistent with the findings of Shahid et al. [4] who reported that indigenous cows in Northern Azad Jammu & Kashmir had an average chest width of 34.1 ± 0.7 cm.

Regarding all qualitative performance aspects of participated cows, the results were almost the same as the study conducted by Kumar et al. [5] on Sahiwal dairy cows, where all were categorized as intermediate. It is further noted that the condition of cows in the intermediate category still needs improvement as it is related to milk production and cow reproduction. Choosing better qualitative performance in participated cows were able to enhance functionality and longevity in milk production.

Table 1. Observed variable and how to measure it [3]



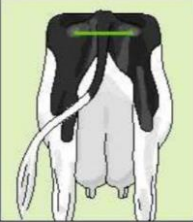
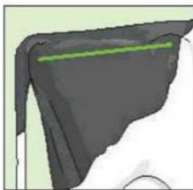

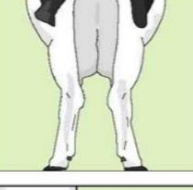

Qualitative performance	Codes	Specifications	
Chest Width	CW	The distance between the top of the inside section of the front legs, measured diagonally	
Body Depth	BD	The distance between the pin bone and the shoulder's tip	
Thurl Width	TW	From side to side, gauge the pelvic region	
Rump Angle	RA	The slope from hooks to pins, when the cow is standing, is measured by pins high/low.	
Rear Legs Side View	RLSV	Angle determined at the hock's front	
Rear Legs Rear View	RLRV	When viewed from behind, the rear legs' feet' direction	
Font Foot Angle	FFA	The angle at the front of the front hoof is measured from the ground to the right hoof's hairline.	
Rear Foot Angle	RFA	The angle at the front of the back hoof is measured from the ground to the right hoof's hairline.	

Table 2. Information type traits of participated cows

Traits	Maximum	Minimum	Mean	Score	Category
Chest Width (cm)	34	17	20.99	5.3	Intermediate
Body Depth (cm)	91	65	79.58	5.5	Intermediate
Thurl Width (cm)	20	12	16.46	4.5	Intermediate
Rump Angel (cm)	4	-7	-2.59	4.4	slight slope
RLSV (Rear Legs Side View) (°)	50	20	146.82	4.9	Intermediate
RLRV (Rear Legs Rear View) (°)	25	5	15.96	4.3	Intermediate
Front Foot angel (°)	50	30	42.94	4.6	Intermediate
Rear Foot Angel (°)	55	30	40.12	4.1	Intermediate

4 Conclusion

It could be concluded that the category of the participated cow was intermediate and had good qualitative performance.

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