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Milkability Trait of White Fulani Cattle in Taraba State: Demographics, Test of Knowledge and Perception of Cattle Handlers

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ABSTRACT

The study examined milkability traits of white Fulani cow: demographics, knowledge and perception of cattle handlers to milkability traits in wukari Local Government Area of Taraba State. A multistage random sampling technique was employed to select 75 respondents for the study. Data were collected with the aid of structured questionnaire and analyzed using frequency, means, percentages and kruskal-wallis test to check for significant difference. About 50.7% of the respondents were pastoralists, 21.1% were cattle traders, 17 % were animal scientists and veterinary doctors and 11.3% were village cattle rearers. Fewer (12.7%) females were involved in handling cattle, while 42.3%, mostly animal scientists, veterinary doctors, cattle traders and village cattle rearers had tertiary education. Those who had no opportunity of obtaining any formal education were mostly pastoralists (28.2%). About 62% of handlers have had over 10 years of cattle handling experience. Majority of the respondents (95.8%) agreed that udder and teat shape had an effect on milkability of white fulani cattle, About (70.4%) of the respondents agreed that white Fulani cattle had moderate milking ability. The study recommended that milk production could be improved by breeding enhancement, environmental management and nutrition improvement.

Keywords: Milkability, White Fulani Cattle, Demographics, Perception

INTRODUCTION

Smallholder farmers in West Africa rely heavily on the White Fulani breed, which is known for its ability to adapt to a variety of settings (Sunday 2022). It has the inherent capacity to produce milk sustainably, which would greatly advance both economic growth and food security (Kugonza *et al*., 2011). For both developed and developing nations, milk is a vital source of income and nutrition (McCarthy and Gorton, 2006). Milkability also known as ease of milking refers to the rate at which milk is entirely released from the udder of a cow (Boseli *et al*., 2020).

The ability of a cow to produce milk is determined by various milkabilty traits namely; milk letdown, total milking time and milk flow rate (Heringstad and Bugten, 2014). To establish the efficiency of milk let down, the evaluation of milkability traits is of utmost importance (Strapak *et al.*, 2011). For better productivity, health and longevity of dairy animals, milkabilty traits and udder morphology needs to be adequately improved. (El Dein *et al*., 2011; Tancin, *et al.*, 2007 and Vrdoljak, *et al*., 2020). Farmers' perceptions and knowledge of milkability traits can influence their ability to make trait-specific selections (Kosgey *et al*., 2000). For instance, one study discovered that farmers who were aware of desired milkability traits, were more likely to choose cows with desirable Milkability traits, such as short teat length and udder shape (Rahman *et al*., 2006).

STUDY PROBLEM

Studies have been conducted to assess farmers' knowledge and perception of milkability traits (Schuurman *et al*., 1994 Kosgey *et al*., 2000), such studies by Makumba *et al*., (2021) analysed the Knowledge, perception and use of milkabilty traits in cattle by Fulani pastoralists in Adamawa state, Nigeria. Flack, *et al*., (2022) studied on Identification of milkability and assessment of traits important for milk production in beef cattle. However, these studies have been conducted in different regions with different populations. Morealso, limited or no research has been done in assessing the milkability traits of White fulani cattle demographics, test of knowledge and perception of cattle handlers in Taraba state. Thus, there is a need to fill this knowledge gap. It is on this premise that this study addressed the following research questions: What are the demographics of the farmers in the study area? What is cattle milkabilty traits of white Fulani cows in the study area? What is the perception of cattle handlers to milkabilty traits in white Fulani cow in the study area?

AIMS AND OBJECTIVES

The objectives of this study is to;

i. examine the demographics of white Fulani cattle handlers;

ii. to identify the cattle handlers' knowledge of milkability traits in white Fulani cattle

iii. examine the perception of cattle handlers to milkability in white Fulani cattle herds in the study area.

This research is aimed at providing information on the demographics, knowledge and perception of cattle handlers to milkability traits in the selected study area. The findings will add to the existing body of knowledge and will prove vital to students, government agencies and researchers who are interested in understanding milkability traits. It will also help policy makers to formulate policies resulting in the initiation of programmes which will help to improve revenue and livelihood of farmers, improving milk production and offer insights into enhancing dairy productivity of the White Fulani cattle.

MATERIALS AND METHODS

The study was conducted in Wukari Local Government Area (LGA) of Taraba State, Nigeria (Figure 1). It covers an area of 4,308 km² and it is located between latitude 7°52' 17.00″N, longitude 9°46' 40.30″E and 152 meters above sea level. Demographic study put the population of Wukari LGA at 318,400 people (NPC, 2016). There are ten (10) wards in Wukari LGA: Akwana, Avyi, Bantaje, Chonku, Hospital, Jibu, Kente, Puje, Rafin Kada and Tsokundi. It is bounded in the north by Gassol LGA, in the east by Donga LGA, in the south by Benue State, and in the west by Nasarawa State and Ibi LGA of Taraba State. It is predominantly inhabited by the Jukun people.

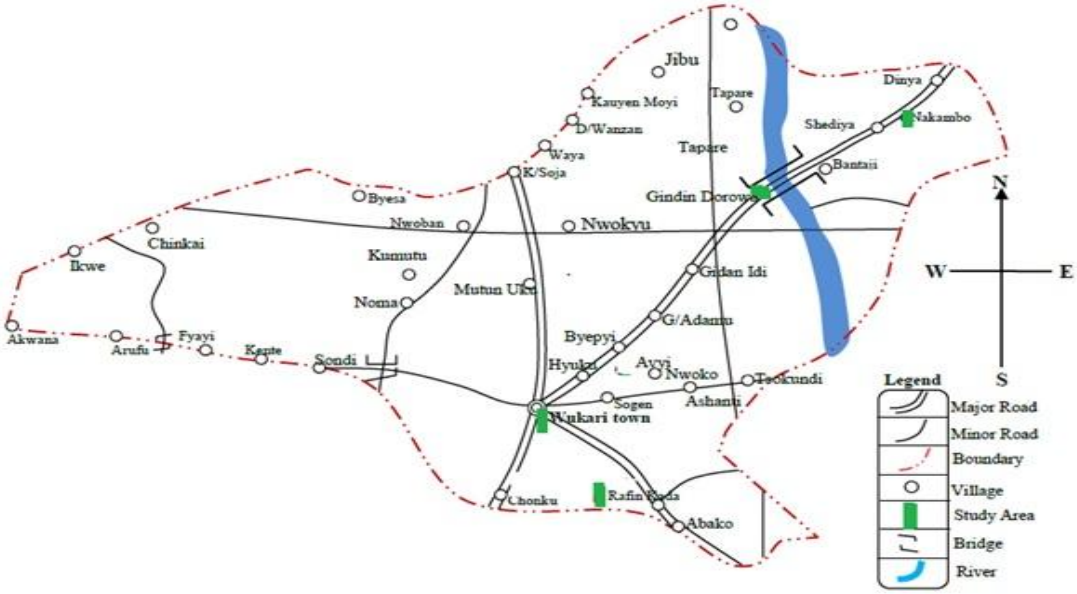

Figure 1: Map of Wukari Local Government Area showing the study area.

Source: Tikon *et al.* 2021

The study employed a multi-stage sampling technique in the selection of the respondents. In the first stage, five (5) out of ten (10) wards in Wukari local government were

Purposively selected on the basis of animal husbandry dominated activities and a minimum of 5 years handling experience. These include; Bantaje ward, Jibu ward, Kente ward, Akwana ward and Rafin-kada ward. In the second stage, five (5) villages were purposively selected each from the selected wards making a total of 25 villages. In the final stage, three (3) respondents were purposively selected from each of the selected villages, giving a sample size of 75 respondents for the study. The questionnaires were administered to respondents whose primary purpose of handling was for beef and/or milk production, health, research, trading and draught in individual households, village, major markets, veterinary clinics, abattoirs and farms. Seventy-one (71) cattle handlers responded.

Data that was obtained from retrieved structured questionnaires was coded and analysed using International Business Men (IBM) Statistical Package for Social Science (SPSS) version 23. Perception of cattle handler's to animal's milkability was analysed using simple descriptive statistics such as frequency, means and percentage. Krukal-wallis test was done to check for significant difference in the perception of candle handlers across the wards.

The Kruskal-Wallis H-test is a nonparametric (do not assume data must be normal with zero mean and constant variance) alternative to the parametric (assumption of normality and homogeneous variance must hold) One-Way Analysis of Variance (ANOVA) F-test (Ross, 2004):

$$H = \frac{12}{N(N+1)}\left[\sum_{i=1}^{k}\frac{R_{i.}^2}{n_i} - 3(N+1)\right] \quad (1)$$

where, K is the number of samples, n_i is the number of cases in the ith sample, N is the number of cases in all samples combined, R_i. is the sum of the ranks of group i, and H is Kruskal-Wallis test statistic.

If a tie occurs in the ranking then equation (1) is transformed to correct the rank tie to produce a correct H statistic value. Hence, equation (1) becomes

$$H = \frac{\frac{12}{N(N+1)}\left[\sum_{i=1}^{k}\frac{R_{i.}^2}{n_i} - 3(N+1)\right]}{1 - \frac{\sum_{j=1}^{t} T}{N^3 - N}} \quad (2)$$

where, $T = t^3 - t$ (when t is the number of tied observations in a tied group of scores).

Therefore, H_0 is rejected if our H statistic value is greater than the chi-square table value 5% significance level at $k - 1$ degree of freedom,

$$H > \chi^2_{k-1}(\alpha) \quad (3)$$

RESULTS

Demographics of White fulani cattle handlers

Table 1 presents the demographics of the respondents in the study areas. The results of the analysis showed that, about 50.7% of the respondents were pastoralists, 21.1% were cattle traders, 17 % were animal scientists and veterinary doctors and 11.3% were village cattle rearers. Fewer (12.7%) females were involved in handling cattle especially in situations where capable men were not available. About 42.3%, mostly animal scientists, veterinary doctors, cattle traders and village cattle rearers had tertiary education whereas those who had no opportunity of obtaining any formal education were mostly pastoralists (28.2%).

About 62% of handlers have had over 10 years of cattle handling experience, the respondents with small herd, were mainly animal scientists, veterinary doctors and village cattle rearers who worked in abattoirs and pen houses. About (18.3 %) of respondents had experience of less than 6 years. Sixty-six percent (66.2%) of the respondents mainly cattle traders and herders have had contact with white fulani cattle on a large herd size of one to fifty (1-50), about 28.2% mostly herders have had contact on a herd size between fifty-one and above (> 51). While 5.6% six were majorly cattle traders who purposely rear white fulani bulls for beef purposes. Twenty one percent (21.2%) of the respondents mostly animal scientists, veterinary doctors and cattle traders had contact with white fulani cattle on handling facilities like the chute and crush, 4.2% of animal scientists and cattle traders also had contact with white fulani cattle using the segregation pen and about (74.7%) mostly pastoralists, cattle traders and village cattle rearers have used facilities like ropes in cattle handling.

Table 1: Demographics of White Fulani Cattle Handlers in the Study Areas (N=71)

Parameter	Anim. Scientist	Vet. Doctors	Cattle Traders	Pastoralist	Village rearers	Total %
Ward						
Jibu	2(2.8)	1(1.4)	6(8.5)	6(8.5)	0.00	15 21.1
Kente	1(1.4)	2(2.8)	2(2.8)	9(12.7)	1(1.4)	15 21.1
Bantaje	4(5.6)	0.00	3(4.2)	6(8.5)	1(1.4)	14 19.7
Akwana	1(1.4)	0.00	3(4.2)	8(11.3)	2(2.8)	14 19.7
Rafin-kada	1(1.4)	0.00	1(1.4)	7(9.9)	4(5.6)	13 18.3
Total	9(12.7)	3(4.2)	15(21.1)	36(50.7)	8(11.3)	71 (100)

Sex							
Male	6(8.5)	3(4.2)	12(16.9)	35(49.3)	6(8.5)	62	87.3
Female	3(4.2)	0.00	3(4.2)	1(1.4)	2(2.8)	9	12.7
Total	9(12.7)	3(4.2)	15(21.1)	36(50.7)	8(11.3)	71	(100)
Age(years):							
<or=20	0.00	0.00	0.00	6(8.5)	0.00	6	8.5
<or=30	3(4.2)	0.00	9(12.7)	15(21.1)	4(5.6)	31	43.7
>30	6(8.5)	3(4.2)	6(8.5)	15(21.1)	4(5.6)	34	47.9
Total	9(12.7)	3(4.2)	15(21.1)	36(50.7)	8(11.3)	71	(100)
Academic qualification							
No-formal	0.00	0.00	1(1.4)	20(28.2)	0.00	21	29.6
Primary	0.00	0.00	1(1.4)	7(9.9)	0.00	9	12.7
Secondary	0.00	0.00	2(2.8)	9(12.7)	1(1.4)	12	16.9
Tertiary	9(12.7)	3(4.2)	11(15.5)	0.00	7(9.9)	30	42.3
Total	9(12.7)	3(4.2)	15(21.1)	36(50.7)	8(11.3)	71	(100)
Experience (years)							
5 years	3(4.2)	0.00	5(7.0)	0.00	4(5.6)	12	18.3
<or=10	1(1.4)	1(1.4)	6(8.5)	4(5.6)	2(2.8)	14	19.7
>10 years	4(5.6)	2(2.8)	4(5.6)	32(45.1)	2(2.8)	44	62.0
Total	9(12.7)	3(4.2)	15(21.1)	36(50.7)	8(11.3)	71	(100)
Herd size							
Nil	1(1.4)	2(2.8)	0.00	1(1.4)	0.00	4	5.6
<or=50	7(9.9)	0.00	10(14.1)	24(33.8)	6(8.5)	47	66.2
<or=100	1(1.4)	1(1.4)	4(5.6)	11(15.5)	2(2.8)	19	26.8
>100	0.00	0.00	1(1.4)	0.00	0.00	1	1.4
Total	9(12.7)	3(4.2)	15(21.1)	36(50.7)	8(11.3)	71	(100)
Type of handling facilities							
Chute	3(4.2)	2(2.8)	4(5.6)	0.00	0.00	9	12.7
Crush	3(3.4)	1(1.4)	1(1.4)	0.00	1(1.4)	6	8.5
Segreg. Pen	1(1.4)	0.00	2(2.8)	0.00	0.00	3	4.2
Ropes	2(2.8)	0.00	8(11.3)	36(50.7)	7(9.9)	53	74.6
Total	9(12.7)	3(4.2)	15(21.1)	36(50.7)	8(11.3)	71	(100)

Values in parenthesis ( ) stands for values in percentages. <: less than, >: greater than, Segreg. Pen: Segregation Pen

Test of knowledge to Milkability traits of white fulani cattle by handlers.

Table 2 shows the distribution of respondents based on their knowledge to milkability traits of white Fulani cattle. The perceived milkabilty of white fulani cattle slightly varied among their handlers. Majority of the respondents (95.8%) agreed that udder and teat shape had an effect on milkability of white fulani cattle when it is not evenly balanced to the body. About 76.1% of the respondents' perceived that offsprings of the cows seem to exhibit the same milkability traits with their parents. About (70.4%) of the respondents agreed that white fulani cattle had moderate milking ability (moderate milkers), and 28.2% noted white Fulani cows are good milkers and very few (1.4%) of respondents think the cattles are poor milkers. Majority of the respondents (87.3%) noted big sizes of udder produces better milk while (12.7%) of respondents stated that better milk is gotten with a moderate sized udder. It was also observed that majority of the respondents (85.9%) cull poor milking cows and 14.1% of respondents did not. About (54.9%) of

respondents mostly pastoralists and cattle traders agreed that shortage in feed/water could result to poor milkability, 16.9% of veterinary doctors, cattle traders, village cattle rearer and animal scientists noted that disease/ stress could result to poor milkability and 4.2% of animal scientists and pastoralists noted that stage of lactation could also lead to poor milkability in white fulani cows

Table 2: Test of knowledge to Milkability Traits in White Fulani Cattle (N=71)

Parameter	Anim. Scientist	Vet. Doctor	Cattle Traders	Pasto-ralist	Village rearers	Total %	
Milkability perception							
Good milkers	0.00	1(1.4)	5(7.0)	13(18.3)	1(1.4)	20	28.2
Moderate milkers	9(12.7)	2(2.8)	9(12.7)	23(32.4)	7(9.9)	50	7 0.4
Poor milkers	0.00	0.00	1(1.4)	0.00	0.00	1	1.4
Total	9(12.7)	3(4.2)	15(21.1)	36(50.7)	8(11.3)	71	(100)
Is milkability Heritable?							
Yes	7(12.7)	2(2.8)	11(15.5)	27(38.9)	7(9.9)	54	76.1
No	2(2.8)	1(1.4)	4(5.6)	9(12.7)	1(1.4)	17	23.9
Total	9(12.7)	3(4.2)	15(21.1)	36(50.7)	8(11.3)	71	(100)
Does udder shape affect milkability?							
Yes	9(12.7)	3(4.2)	14(19.7)	34(47.9)	8(11.3)	68	95.8
No	0.00	0.00	1(1.4)	2(2.8)	0.00	3	4.2
Total	9(12.7)	3(4.2)	15(21.1)	36(50.7)	8(11.3)	71	(100)
What udder size produces better milk?							
Big size	7(9.9)	3(4.2)	14(19.7)	32(45.1)	6(8.5)	62	87.3
Moderate size	2(2.8)	0.00	1(1.4)	4(5.6)	2(2.8)	9	12.7
Total	9(12.7)	3(4.2)	15(21.1)	36(50.7)	8(11.3)	71	(100)
Do you cull poor milking cows?							
Yes	9(12.7)	3(4.2)	14(19.7)	28(39.4)	7(9.9)	61	85.9
No	0.00	0.00	1(1.4)	8(11.3)	1(1.4)	10	14.1
Total	9(12.7)	3(4.2)	15(21.1)	36(50.7)	8(11.3)	71	(100)
What are the problems resulting to poor milkability?							
PGB	1(1.4)	0.00	7(9.9)	1(1.4)	1(1.4)	10	14.1
SFW	3(4.2)	0.00	3(4.2)	32(45.1)	1(1.4)	39	54.9
Disease/stress	2(2.8)	3(4.2)	4(5.6)	0.00	3(4.2)	12	6.9
Climatic con.	2(2.8)	0.00	1(1.4)	1(1.4)	3(4.2)	7	9.9
Stage of lact.	1(1.4)	0.00	0.00	2(2.8)	0.00	3	4.2
Total	9(12.7)	3(4.2)	15(21.1)	36(50.7)	8(11.3)	71	(100)

Values in parenthesis ( ) stands for values in percentages, PGB: Poor genetic background, SFW: Shortage of feed/water, Climatic con :Climatic condition, Stage of lact. : Stage of lactation.

Perception of handlers to milkability traits in white fulani cattle based on their demographics

Table 3 shows the perceived milkability of white fulani cattle by their handlers. The Kruskal-wallis test shows no significant association ($p>0.05$) across the wards and majority 70.4% of respondents noted that white Fulani cows had moderate milkability. There was also no significant ($p>0.05$) association between the category of respondents and their perceived idea on milkability, also the age of respondents had no significant ($p> 0.05$) effect

on milkability, majority of respondents (70.4%) both young and old perceived milkability of white Fulani cattle to be moderate. The Kruskal-wallis test also revealed that respondent's educational level, handling purpose, years of experience, herd size and handling facility used did not change their perception of how they viewed milkability of white Fulani, hence it had no ($p>0.05$) significant effect on their perception.

Table 3: Perception of handlers to milkability traits in White Fulani Cattle (N=71)

Parameter	**Perceived milkability score**			**Kruskal-wallis Test**				
	1	**2**	**3**	**Total**	**(%)**	**Stat.**	**DF**	**P-Value**
Ward								
Jibu	5(7.0)	10(14.1)	0.00	15	21.1			
Kente	6(8.5)	8(11.3)	1(1.4)	15	21.1			
Bantaje	4(5.6)	10(14.1)	0.00	14	19.7	2.537	2	.281
Chonku	3(4.2)	11(15.5)	0.00	14	19.7			
Rafin-kada	2(2.8)	11(15.5)	0.00	13	18.3			
Total	20(28.2)	50(70.4)	1(1.4)	71	100			
Category of handlers								
Ani. Scient.	0.00	9(12.7)	0.00	9	12.7			
Vet. Surg.	1(1.4)	2(2.8)	0.00	3	4.2			
Catt. Trader	5(7.0)	9(12.7)	1(1.4)	15	21.1	1.107	2	.575
Pastoralist	13(18.3)	23(32.4)	0.00	36	50.7			
Vil. Catt.Rear.	1(1.4)	7(9.9)	0.00	8	11.3			
Total	20(28.2)	50(70.4)	1(1.4)	71	100			
Sex								
Male	18(25.4)	43(60.6)	1(1.4)	62	87.3			
Female	2(2.8)	7(9.9)	0.00	9	12.7	.349	2	.581
Total	20(28.2)	50(70.4)	1(1.4)	71	100			
Age of respondents								
<or=20	2(2.8)	4(5.6)	0.00	6	8.5			
<or=30	9(12.7)	22(31.0)	0.00	31	43.7	1.086	2	.581
>30	9(12.7)	24(33.8)	1(1.4)	34	47.9			
Total	20(28.2)	50(70.4)	1(1.4)	71	100			
Educational level								
No-formal	7(9.9)	14(19.1)	0.00	21	29.6			
Primary	4(5.6)	4(5.6)	0.00	8	11.3			
Secondary	4(5.6)	8(11.3)	0.00	12	16.9	3.375	2	.185
Tertiary	5(7.0)	24(33.8)	1(1.4)	30	42.3			
Total	20(28.2)	50(70.4)	1(1.4)	71	100			
Purpose of handling								
Beef prod.	5(7.0)	20(28.2)	1(1.4)	26	36.6			
Milk prod.	3(4.2)	6(8.5)	0.00	9	12.7			
Draught	0.00	1(1.4)	0.00	1	1.4	3.915	2	.141

Health	1(1.4)	8(11.3)	0.00	9	12.7			
Prestige	11(15.5)	15(21.1)	0.00	26	36.6			
Total	20(28.2)	50(70.4)	1(1.4)	71	100			
Handling experience(years)								
5 years	3(4.2)	9(12.7)	0.00	12	16.9			
<or=10 years	3(4.2)	11(15.5)	0.00	14	19.7	1.391	2	.499
>10 years	14(19.7)	29(40.8)	1(1.4)	44	62.0			
Total	20(28.2)	50(70.4)	1(1.4)	71	100			
Herd size								
Nil	1(1.4)	3(4.2)	0.00	4	5.6			
<or=50	14(19.7)	32(45.1)	1(1.4)	47	66.2			
<or=100	5 (7.0)	14(19.7)	0.00	19	26.8	.344	2	.842
>100	0.00	1(1.4)	0.00	1	1.4			
Total	20(28.2)	50(70.4)	1(1.4)	71	100			
Type of handling facility								
Chute	3(4.2)	6(8.5)	0.00	9	12.7			
Crush	0.00	6(8.5)	0.00	6	8.5			
Segreg. Pen	0.00	3(4.2)	0.00	3	4.2	1.438	2	.487
Ropes	17(23.9)	35(49.3)	1(1.4)	53	74.6			
Total	20(28.2)	50(70.4)	1(1.4)	7	100			

N: number of observation, 1: Good milkers, 2: Moderate milkers, 3:Poor milkers, stat.:Statistic, DF:Degree of freedom, Ani. Scient.:Animal scientist, Vet surg: vetenary surgeon**,** Catt. Trader:Cattle Traders, Vil. Catt.Rear: Village Cattle rearers, >:greater than sign, <:less than sign, Beef prod.:Beef production, Milk prod.:Milk production, Segreg.Pen: segregation Pen

DISCUSSION

Demographics of the respondents

From the research conducted, the study revealed that the area had a high level of male participation in cattle handling tasks, which suggests that men were the predominant gender in this activity. The predominance of men in cattle handling in the study area could be due to the fact that cattle are large animals that require a certain level of strength, speed and confidence to handle safely and effectively (Kechero 2002). The high number of experienced pastoralists in the study area is consistent with the hypothesis that most cattle breeds are named after the tribes and ancestors from which they originated (Okeyo *et al*., 2015). The lack of formal education among pastoralists makes it difficult to fully understand and quantify their knowledge and expertise when it comes to understanding the concept of milkability and other factors that can affect the health and well-being of cattle. There is significant variation in the way cattle are handled, as different handlers may have different approaches based on the facilities they have available, the size of their herd, and the purpose for which the cattle are raised, as expressed by the respondents Hurst, R. (n.d).

Test of knowledge to milkability trait of White Fulani Cattle by handlers

The perception of majority of the handlers to milking ability of offsprings being similar to its parents agrees with the report of Sammy, (2012) that udder and teat conformation traits are highly heritable and could serve as a criterion for selection in dairy cattle. It was also opined by Carlstrom, (2014) that milkability between cows within herds differs significantly, and a larger proportion of these differences are genetically determined. According to Mark *et al.* (2000), the correlations between udder size and milk yield suggest that cows with larger udders have higher milk yield which support the reason why respondents in the study area are of the opinion that the bigger the udder, the better the milk yield (Mclaren *et al*., 2016). Moreso, Idusuyi, (2013) reported that animal fear of humans has negative correlation with their productivity which agrees with the handler's perception that method of handling could have an effect on milkability. Also, it was reported by Hemsworth (1993), that the relationships between the attitude and behaviour of the handler and cattle reaction, welfare, productivity and efficiency of farm animals are correlated thus, to increase animal productivity, it is important to work on human-animal contact (Daniel *et al.,* 2020). It was reported by Krogmeier *et al.* (2006) that attention should be placed on milkability traits by dairy farmers because poor milking cows slow the milking process in a herd which support the reason why must handlers cull poor milking cows.

Both morphologic and physiological mammary properties affect milk production in dairy animal, strong connection to the animal body, and udders with deeper and larger lobes are highly demanded (Oladipupo *et al.,* 2023) which indicates why majority of cattle handlers settle for bigger udder size. Bhuiyan *(*2004) stated that the size and shape of the udder could also greatly influence milk secretion which agreed with handler's perception that udder and teat shape affects milkability.

Perception of cattle handlers to milkability traits of White Fulani cattle

The overall average perception score in the study disclosed that the animals had moderate milkability which indicates why White Fulani cattle as compared to other exotic breeds have lower milkability and daily milk yield significantly lower than other exotic cattle breeds (Rothschild, 2008). The perception by respondents also suggests how the animal sensitivity is viewed when it is to be approached, driven, weighed, treated for injury, transported and other routine activities like milking (Haskell *et al*., 2014). Respondent opinions in regard to their ability to predict the animal's performance could have differed by their knowledge of cattle handling, the cattle and the facilities used in handling Hurst, R. (n.d). Various factors may have an effect on mikability traits like the milking conditions of animal, stage of lactation, year and age at calving, season and year of calving are environmental factors termed non-genetic that can have measurable and immeasurable effects on animal milkability (Tancin *et al.*, 2006; M'hamdi *et al.*, 2012).

Conclusion

95% of the respondent agreed that udder and teat shape affect milkability of the white Fulani cow and it shows moderate milkability.

There was no significant difference between the category of handlers and their perception on milkability traits of white Fulani cows in the study area.

Recommendations

On the basis of the findings of the present study, the following recommendations are made:

Milk production could be improved by breeding enhancement, environmental management and nutrition improvement.

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